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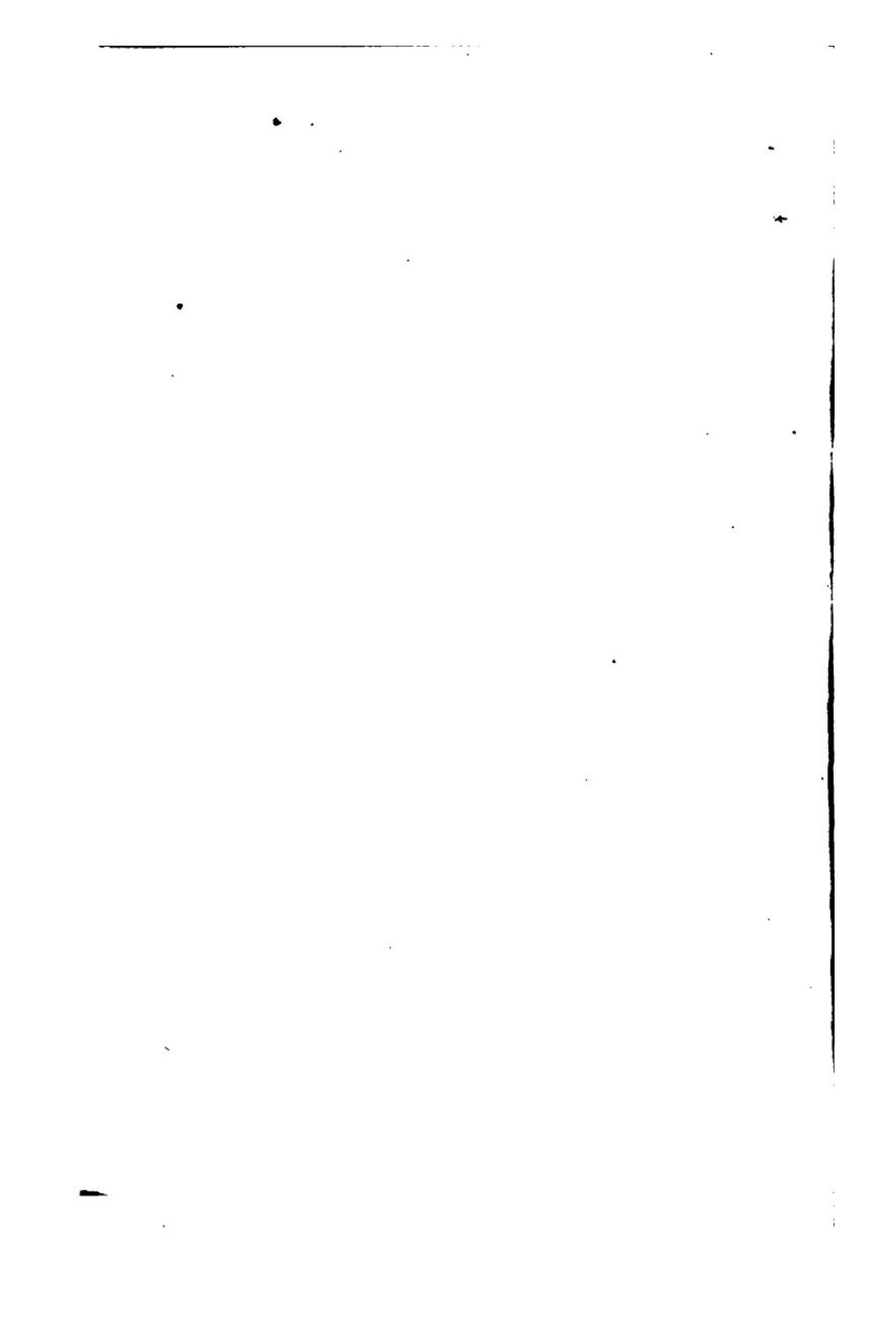
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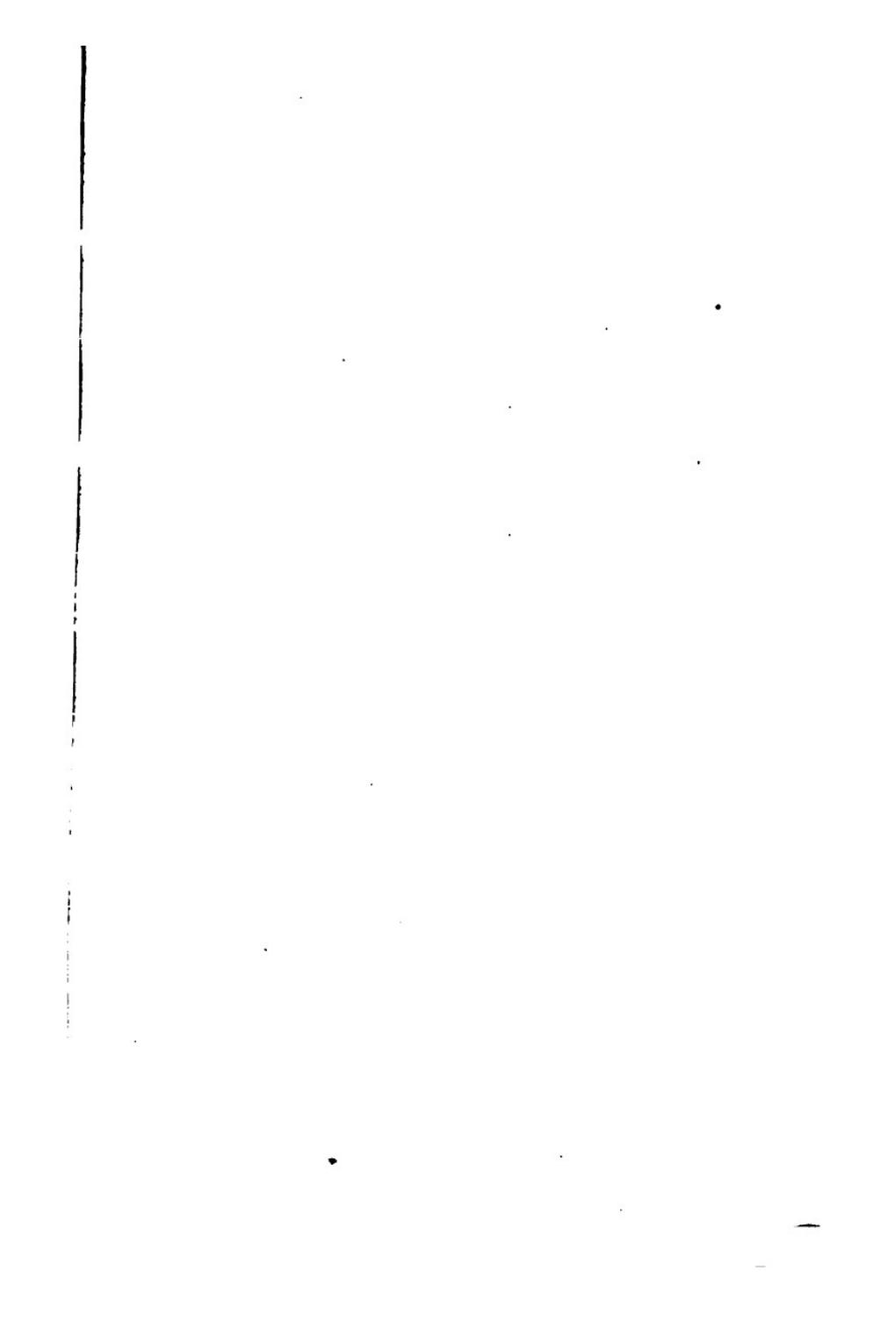
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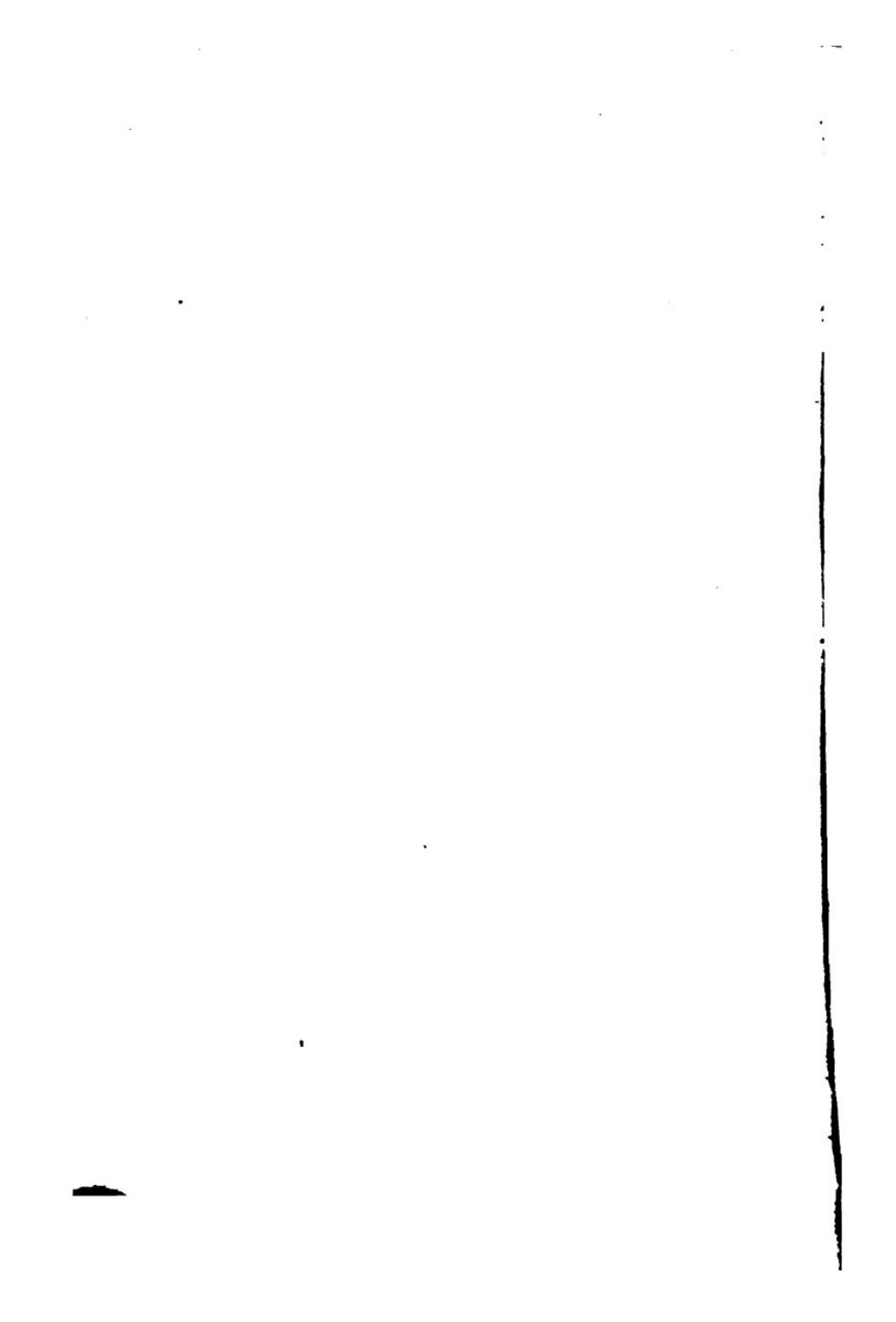
By Mrs J. D. Baldwin

Nov. 2, 1891

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THE 38278
FRUIT CULTURIST,

ADAPTED TO THE

CLIMATE OF THE NORTHERN STATES;

CONTAINING DIRECTIONS FOR

RAISING YOUNG TREES IN THE NURSERY,

AND FOR THE MANAGEMENT OF THE

ORCHARD AND FRUIT GARDEN.

BY JOHN J. THOMAS.



ILLUSTRATED WITH ENGRAVINGS.

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P R E F A C E.

THE OBJECT OF THIS WORK, is not only to furnish useful directions to those who may be little acquainted with the management of Fruit Trees, but to promote the culture of the best varieties, and to improve their treatment so as to secure excellence and productiveness in a more eminent degree than is usually attained.

It was a very just remark of Professor Lindley, that those who have sought for information in books on this subject, have generally found plenty of *rules* for action, but very few *reasons*. The writer has aimed to avoid this error, and by occasionally presenting the rationale of operations, to simplify the directions given, and render them more clear and obvious to the practical cultivator.

As this is comparatively a small work,—intended partly as an answer to numerous inquiries,—those who need more extended information, especially in relation to the different varieties of fruit known

in this country, are referred to the excellent work of A. J. Downing, on "The Fruits and Fruit Trees of America."

The writer is indebted to his father, David Thomas, of Cayuga county, for several valuable original notes, which will be found in various parts of the work.

CONTENTS.

PART I.

GENERAL DIRECTIONS AND PRACTICES.

CHAP.	I.	Introductory Remarks; profits and advantages of Fruit Culture,	9
"	II.	History, Improvement, and Nomenclature,	16
"	III.	Influence of Climate, Culture and other Causes,	23
"	IV.	Best kinds of Stocks,	33
"	V.	Production of New Varieties,	36
"	VI.	Propagation by Budding and Grafting, by Layers and by Cuttings,	42
"	VII.	Soil, Situation, and Enclosures,	54
"	VIII.	Transplanting,	60
"	IX.	Cultivation of the ground,	68
"	X.	Pruning old Trees, and budding and grafting new tops,	74
"	XI.	Causes of Fruitfulness,	80
"	XII.	Implements,	85

PART II.

ON THE DIFFERENT KINDS OF FRUITS.

CHAP. I.	The Apple,.....	93
" II.	The Pear,.....	111
" III.	The Quince,.....	118
" IV.	The Peach and Nectarine,.....	123

CHAP. V.	The Apricot,	140
" VI.	The Plum,	142
" VII.	The Cherry,	150
" VIII.	The Grape,	156
" IX.	The Gooseberry and Currant,	164
" X.	The Raspberry,	167
" XI.	The Strawberry,	169
" XII.	Work in the order of Time,	173
	Selection of kinds,	178

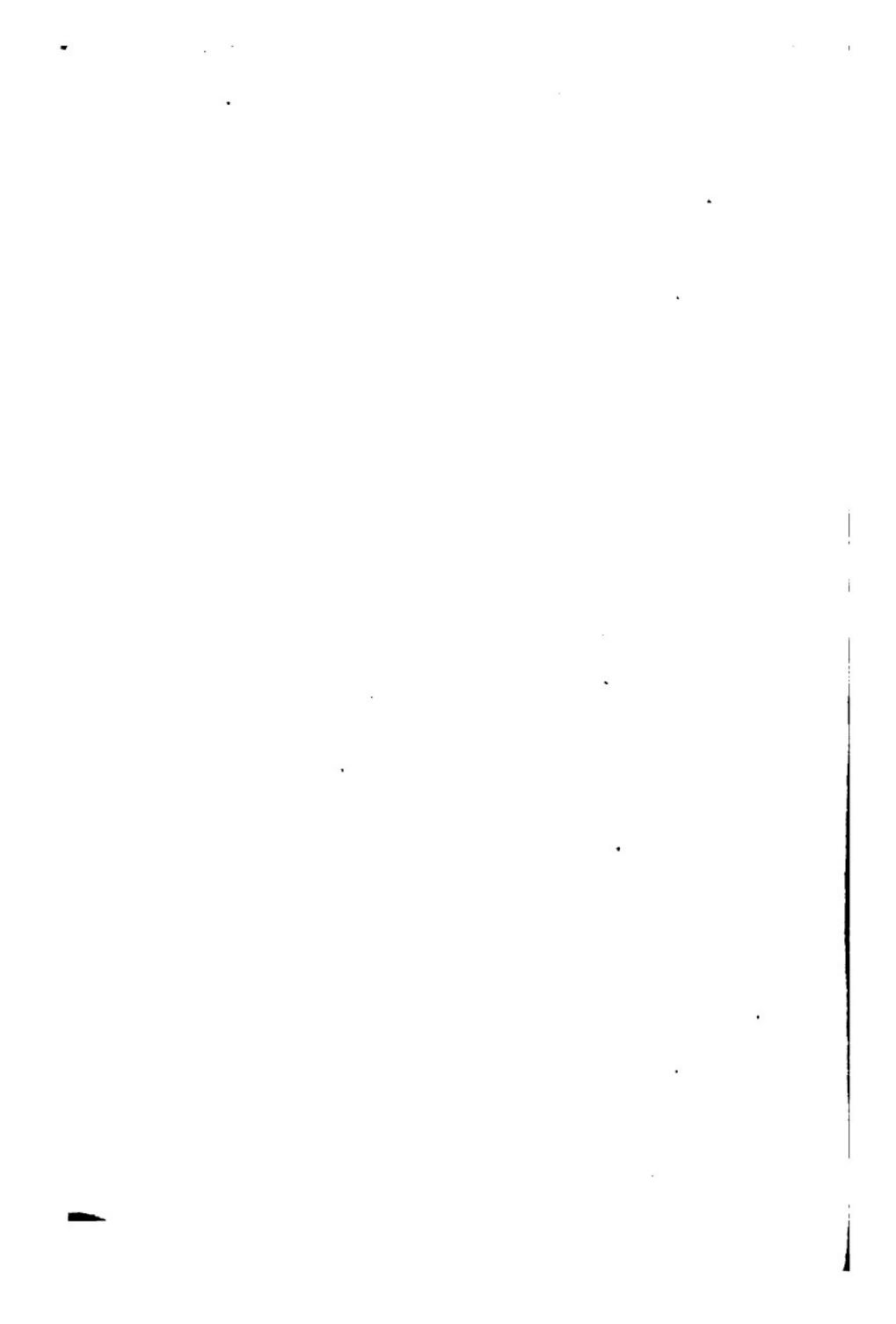
DESCRIPTIVE LIST OF FRUITS.

Apples,	180
Pears,	192
Cherries,	202
Plums,	206
Peaches,	211
Nectarines,	215
Apricots,	216

Note on Grafting the Vine, 217

PART I.

GENERAL DIRECTIONS AND PRACTICE



CULTURE OF FRUIT.

CHAPTER I.

INTRODUCTORY REMARKS.

IT is believed that if our landowners knew that a continued succession of the finer fruits, throughout most of the year, could be had with very moderate attention and labor, we should not much longer witness such general destitution. The abundant products of their gardens and orchards, already prove that the fault is not in the climate and soil; the contrast between the kinds they cultivate, and those which rank as first rate, shows how much they are losing; while the few choice collections to be found, exhibit most plainly what might be accomplished by all.

A single instance may serve to show what is easily placed within our reach. A cultivator, possessing a moderate collection, had fully ripe upon his trees at mid-summer, or at the time of wheat harvest, three varieties of pear, five of apricot, two

of plum, four of apple, and several of the later varieties of cherry,— making nearly twenty in all; besides an early peach just beginning to ripen. Most of these were good, and some of them delicious.

Intelligent persons are often greatly surprised at such facts, which are but a specimen of what a succession may afford for several months together. In our latitude, the supply begins with the first days of summer; the earliest Strawberries and Cherries ripen nearly together; they are followed for several weeks by other varieties, and by Raspberries; the earlier Apricots and Pears become ripe from one to two weeks before our wheat harvest; Apples and Plums only a few days later; and soon after, from the latter part of summer to mid-autumn and later, a host of the richest varieties of Apples, Pears, Peaches and Nectarines, Plums and Grapes, keep up a continued succession, to be followed, in their turn, by the more durable winter fruits. Pears and Grapes may be kept till spring, and some of the best keeping Apples the whole year through. Who that already has a bearing orchard of all these, would forego the luxuries they yield, for ten times the labor and expense they have cost?

It is not surprising that such fine fruits should be neglected, when in fact most of them are unknown to the mass of well informed persons. An intelligent acquaintance remarked that he did not

consider so poor a fruit as the Cherry worth cultivating ;—but subsequent conversation proved that he had never seen a good one,—the names of such delicious varieties as Elton, Florence, and Black Eagle, being as unknown to him as Hebrew to an untaught child. Another intelligent person, who had spent a considerable portion of many years in making a collection of bearing trees, had never even seen an Apricot, nor had known that there was such a fruit, hardy as the Peach, raised with nearly the same facility, ripening at mid-summer, and superior in delicious qualities to our finest and richest plums.

But the expense of procuring and planting the trees, and the time required for bearing, deter many from the attempt. They do not know, perhaps, that the unnecessary cost yearly lavished on fine furniture, fine carriages and harness, and other needless luxuries, would pay for and plant a fruit garden, and in five years afford a hundred fold more real enjoyment and utility. But will trees come into plentiful bearing in *five years*? They will, with a selection of proper varieties and with the best culture. It is true, more than twice that period often passes, before the owner reaps his reward ; but neglect is nearly always the cause. What farmer would plant a field of corn, and, omitting entirely the operations of cultivating and hoeing, expect a crop in the midst of grass and

weeds? Not less ruinous is the neglected culture of newly planted fruit trees; and the loss in the delicious qualities of their subsequent products, as well as in delay, is incredibly great. But when selection and culture have been attended to, frequent instances are witnessed of valuable returns in three to five years from setting out. A Bartlett pear tree, six feet high and two years from transplanting, bore a peck of superb fruit; a Julienne, even younger, yielded nearly the same; a Jonathan apple, removed to the orchard when not larger than a carriage-whip, produced a bushel the fifth year; and many similar cases might be named. But, in every instance, the best treatment was given.

PROFITS.

Those with whom pecuniary considerations are of importance, may be interested to know, the returns yielded by the best varieties. A cultivator of fine fruit, well known to the writer, obtained in market eight dollars for one year's crop, grown on two fine early young cherry trees. In another season he received twenty-four dollars from four early peach trees, only six years after they were budded. Another acquaintance sold the crop of a Yellow Spanish cherry tree for seven dollars; another sold the crop of one large apple tree, amounting to forty bushels, for ten dollars; and his neighbor obtained thirty dollars for a crop of pears of equal

size from a single tree. More extraordinary returns are on authentic record; the preceding are scarcely greater than good selection and good management will often insure. And what amount would an acre of such trees yield to the owner? An acre of cherries, for instance, might include a hundred and fifty trees. Four dollars from each, the lowest example just given, would be six hundred dollars per annum, a sum almost incredible, and yet not impossible, with the best management and selection, in the neighborhood of cities. The same number of the best early peach trees, usually of smaller growth than later sorts,—would occupy an equal space, and the crop afforded would not be less profitable. There are few trees, which, well attended to, would yield less than two or three bushels, and as a consequence afford a return of three to ten dollars each. An acquaintance, on being asked, last summer, what he received for his fine early peaches, replied, "Whatever I ask." The price was three to four dollars; which was but little more than that obtained by his neighbor, whose peach orchard covered ten acres. But it must be remembered that those often regarded erroneously as very fine, will not command such a market. A cultivator found he could sell fine specimens of the Early York peach, sooner at a dollar and a half per bushel, than the common "rare-ripes," of the country, on the same day, for

half that sum. While the finest early Peaches bring three or four dollars, some others, later and poorer, will not sell for fifty cents.

Good winter apples always command a market. For the last thirty years, the Swaar, Rhode Island Greening, and Esopus Spitzenburgh, have scarcely varied from twenty-five cents a bushel in the most productive portions of the State. Late keepers are sold early in summer for more than triple that sum. An acre of forty trees, with good culture, will average through all seasons not less than two hundred bushels, or fifty dollars a year. Instances are frequent of thrice this amount. The farmer, then who sets out twenty acres of good apple orchard, and takes care of it, may expect at no remote period a yearly return of five to fifteen hundred dollars a year, and even more, if a considerable portion is occupied with late keepers. This is, it is true, much more than the majority obtain; but the majority wholly neglect cultivating and enriching the soils of their orchards.

But where a market is not at hand, a plentiful supply of fine fruit through most of the year, becomes a very important article in family economy. The cost of providing for the table, is greatly lessened, where daily dishes of Strawberries, or Raspberries, or Apricots, Nectarines, or Peaches, are at hand. The great saving, too, as well as the comfort and health, from an abundance of good and

highly flavored apples for culinary use, should not be forgotten. How many pounds of sugar would be saved in a family per year, by a constant use of such rich fruit as the Tallman Sweeting, the Fall Pippin, and the Spitzenburgh, for cooking, which have been found cheaper for this very reason, at thirty cents a bushel, than others commonly known as "cooking apples" merely, at ten cents.

It may perhaps strike some as a reason for doubting the preceding estimates, that if such profitable returns may be had, more people would, as a matter of course, have engaged in the business. But this inference is by no means correct. From the general neglect of cultivation, bearing trees are looked upon as the result almost of a man's life time; and many, reasoning perhaps as he did, who asked, "Why work for posterity—what has posterity done for us?" unwittingly punish themselves instead. Slow and sure profits, are mostly set aside for immediate results. The future is too often eclipsed by the present. Benefits at a distance, give procrastination a thousand times stronger foot-hold than those close at hand. Hence the reason so many, in their eagerness for present gain, exclude entirely the claims of the future, and neglect what may certainly at some time prove highly beneficial.

CHAPTER II.

HISTORY, IMPROVEMENTS, AND NOMENCLATURE.

THE earliest fruits mentioned in history, are the Grape, the Apple, and the Fig, the former being cultivated about the time of the deluge. The Almond is mentioned repeatedly in the sacred records, nearly 4000 years ago ; and Theophrastus, who lived about 300 years before the Christian era, remarks that it was the only tree in Greece that produced blossoms before the leaves ; hence we may safely infer that the Peach was then unknown. The fact that the Jewish history no where speaks of the Peach, indicates that it was not a native of Persia, a country long inhabited by that people.* It was known to the Romans at the height of their power, and the Nectarine was spoken of by Columella and by Pliny, as an admired fruit of their time. The Apple and Pear were well known in the days of Pliny, who speaks of twenty-two varieties of the former, and thirty-six of the latter. The Cherry, a native of Pontus and some parts of Eu-

* It is found *wild* on the Himalayan mountains, whence it was probably carried to Persia, and to other parts of the world.

rope, was introduced among the Romans at the time of the Mithridatic war. The Plum was known both to the Greeks and Romans; and Pliny, who sometimes dealt in the marvellous when writing on fruits, asserts that they were grafted upon apple stocks, producing what were called Apple-Plums, and upon almond stocks, yielding both fruits, the stone being like that of an almond. And Virgil, with equal absurdity, speaks of grafting Apples on planes, of adorning the wild ash with the blossoms of the pear and represents swine as crunching acorns under elms; nor is it very long since a few equally singular notions were held by some moderns.

The cultivation of fruit in Britain, from which so much of our own was obtained, began to receive attention with other rural improvements. The earliest British writer on this subject, was Richard Arnold, who published a chapter in his "Chronicles" in 1502, "On the crafte of graftynge and plantynge and alteryng of fruits, as well in color as in taste." He was succeeded about 1538 by Tusser; in 1597 by Gerard; in 1629 by Parkinson; in 1658 by Evelyn; in 1724 by Miller; in 1791 by Forsyth; soon after which the great improvements introduced by the late president Knight, and followed by Lindley, Thompson, and others, formed a new era in the cultivation of fruits. The gradual progress of the art is indicated in part by the number

of varieties distinctly named or described by the various authors already mentioned. "Apples of all sorts," are mentioned by Tusser; seven sorts by Gerard;* Parkinson enumerates sixty-seven; Hartlib in 1650 alluded to one cultivator who possessed two hundred, and believed there were not less than five hundred; Ray in 1688 says there were seventy-eight cultivated in the London nurseries; Forsyth in 1806 describes a hundred and ninety-six kinds; George Lindley, in 1831, minutely and accurately described two hundred and fourteen; while the Fruit Catalogue of the London Horticultural Society gives a list of fourteen hundred varieties, collected and cultivated by that society, three fourths of which were found to be either the same fruit under different names, or else unworthy of cultivation. The same remark will apply, at least in part, to the many hundreds advertised for sale in different nurseries in the United States.

* It is of course evident from the very nature of the Apple, and the facility with which new varieties are formed, that this number was only a selection of a few; as Gerard himself says, "The fruit of Apples do differ in greatness, form, color, and taste; some covered with a red skin, others yellow or green, varying exceedingly; some very great, some little, and many of a middle sort; some are sweet of taste, or something sour; most are of a middle taste, between sweet and sour; the which to distinguish I think it impossible, notwithstanding I hear of one that intended to write a peculiar volume, of Apples, and the use of them."

A similar progress, less in degree, is indicated in the cultivation of the Pear. Tusser speaks "of all sorts;" Parkinson enumerates sixty-four varieties; Miller, eighty; and Lindley describes one hundred and sixty-two.

Most of these writers also mention numerous varieties of the Cherry and Plum.

Gerard describes the early, and the white, red, and yellow peaches, and says there were many others; Parkinson enumerates twenty-one; Miller thirty-one; Lindley describes sixty; and in this country, more favorable to the peach than England, there are probably not less than two or three hundred known and named varieties.

Eminent advantages have resulted from the application of scientific principles, by Lindley, Knight and others, in the cultivation of fruit, and in the propagation of improved varieties. Several hundred new Pears, some of them of the finest quality, were obtained by Van Mons of Belgium, by a successive selection of improved seedlings; and Knight in England has produced some of the finest varieties of the Cherry, Plum, and Apple, by a cross fertilization of old sorts.

One of the greatest difficulties yet remaining, is the confusion in the names of varieties. The very slight shades of difference in many; the impossibility of accurately defining these shades in written descriptions; and the changes produced

in them by soil, situation, climate, and culture, have largely contributed to this difficulty. It has also been increased by looseness, carelessness, and want of precision in descriptions, and especially the almost total neglect of a classification of flavors, usually the most unvarying and great decisive point of distinction in varieties. "Some individuals," says Loudon, "who have cultivated, fruited, or studied extensive collections of Apples, Pears or Plums, may know at sight a considerable number of varieties; but in general, very few sorts are known by one individual; and in the great majority of cases a gentleman gardener can speak with confidence regarding those sorts only which are under his care. The reason of this is that the shades which distinguish varieties are so fleeting as not to be retained in memory, or only retained to a very limited extent. An Apple may be distinguished from twenty other apples all very much alike, when the whole twenty are placed together before the eye; but any one of the twenty, taken apart, and delineated and described, however perfectly, will hardly present any marks sufficiently distinctive to be remembered, and by which it may be recognized with any degree of certainty."

The great number of names often given to one fruit, either from ignorance or to promote its sale, have added to the confusion. The celebrated Virgalieu pear has thirty different names; the

Brown Beurré, fourteen ; several others have nearly an equal number. The confusion resulting also from various applications of these different names by different cultivators, may be easily imagined. The varieties of the Peach which Lindley describes as Grosse Mignonne, Neil's Early Purple, Pourpres Hative, Royal Kensington, and Superb Royal, are all described as a single variety by McIntosh, under the name Grosse Mignonne, to which he adds twenty-seven synonyms.

The labors of the London Horticultural Society have contributed much towards removing the bewildering confusion into which the numerous fruits and their names were thrown. Large collections were made from different countries ; and by a careful and minute examination for several successive years, innumerable mistakes were corrected. The Massachusetts Horticultural Society, at Boston, in connexion with the labors of the late Robert Manning of Salem, (whose collection of Pears alone contained eight hundred sorts,) have tended greatly towards the same useful end in this country. The subject is also receiving much attention in various parts of the United States. The indispensable necessity of a more thorough examination of fruits by those who propagate them for sale, is more appreciated and becoming reduced to practice. Several extensive collections of American and European fruits have recently been made or

greatly augmented, for the purpose of a more thorough examination, comparison, and selection of varieties.

That every difficulty may be removed, and every disputed question settled, is not to be expected ; but they will of course be diminished in proportion to the extent and accuracy of these labors.

CHAPTER III.

INFLUENCE OF CLIMATE, CULTURE, AND OTHER CAUSES.

THE importance of attention to the variation in fruit, caused by a change in climate, soil, and cultivation, appears to be much underrated. While the peculiar or essential character remains unchanged, the quality, or degree of excellence, is variously modified. This is sometimes so great that serious disappointment results; and high expectations caused by success in one case, are defeated by different circumstances in another. Hence the necessity of understanding these modifying influences.

The changes produced by *climate* are greater in some classes of fruits than in others. The Cherry varies but little in character and quality; the fine varieties originated by Thomas Andrew Knight near London, are also among the finest when removed to the northern states of America. This may be owing in part to their period of maturity, which, occurring early in summer, could not be influenced by the length of the seasons. But with the Apple, Pear, and Peach, the case is quite

otherwise Very few of the whole British catalogue of Apples, are first in quality here. The White Astracan, an apple of high reputation in Russia, becomes very inferior in England; and a similar loss takes place on the removal to England of some of the finest Apples of Italy. Some of the best Peaches in the neighborhood of Philadelphia, become second or third rate in Western New-York, the shorter and cooler summers of the latter region not being sufficient to give full flavor to many of the more southern varieties. American peaches taken to England lose still more. Of fifty sorts, from the middle and western states, tested at the great Chiswick garden, all but two were pronounced "worthless."

The Pear is perhaps more changed in quality and flavor by external causes than any other species of fruit. Variations in different regions of our own country, and even in different seasons, are great and striking. The Virgalieu, regarded on the whole as the finest pear in Western New-York, is pronounced by Kenrick in the neighborhood of Boston, as an "outcast, intolerable even to sight." Some sorts, which fail at Boston, are still cultivated with success at Salem, only fifteen miles distant.

But the influence of seasons alone produces extraordinary results. In the year 1842, the Wurtemburg pear was regarded in Western New-York as the finest foreign pear among several which had

then just fruited ; but the two succeeding seasons it was nearly worthless. The Bezi de la Motte, in some places generally a delicious melting pear, is at others, usually dry and tasteless. Some striking cases were mentioned by the late Robert Manning of Salem. The Beurré Duval, which has a high reputation in Europe, produced, the first year of bearing, beautiful fruit ; but on ripening, they were found tasteless and worthless. The next year the same tree produced fewer pears, half the size, different in shade of color, and delicious in flavor. In another case the Hericart yielded fruit which proved melting and high-flavored. The next year it not only varied in size, shape, and color, but was so tasteless as to be immediately rejected as worthless. Again, the Calabash pear produced in two seasons, oblong fruit with projecting ridges, the color being bright russet, and the flesh breaking, melting, and very good. The next year the fruit was more abundant, of larger size, of a bright yellow color, without ridges, and the flesh very insipid.* But these were unusual cases. They serve to show however, the extreme caution to be used, both in describing fruit, and deciding upon the merits of new kinds. They also show the propriety of aiming to select such as are little affected by such influences, as the Madeleine and Seckel, and in most localities, the Virgalieu.

It is this liability to change, and occasionally to become valueless, that has induced *the opinion that varieties are worn out by old age*; but this is disproved by the facts that the same varieties flourish elsewhere with undiminished excellence; and that some of the new sorts, when removed to ungenial climates, also exhibit precisely the same symptoms of "running out" and decay.*

The influence of our summers on the quality of the peach is well known. But while some varieties, as the Early York, are much better in warm and favorable seasons, and worse in cold ones, others, as the White Imperial and some yellow-fleshed sorts, continue nearly unchanged through all the fluctuations of temperature.

INFLUENCE OF CULTURE.

The effect of keeping the soil mellow by repeated stirring, on most of the finer and delicious fruits, can be hardly believed by those who have only seen it on the more common varieties of the apple. "No stunted tree bears fine fruit. Even the Seckel pear, of all sorts the highest flavored, is so inferior in some situations, as to be scarcely worth gathering. Some other pears however, lose their distinguishing traits entirely, and bear nothing suitable for human lips. Of this class has been the St. Ghislain in my grounds, where the tree stood neglected

See Hovey's Magazine, vol. 5, p. 50.

for several years, and caused me to wonder how any thing so insipid could have passed through the hands of Robert Manning. Yet that eminent and worthy pomologist was not to blame. An accidental improvement of its condition, caused it the last season to bear excellent fruit, increased some in size, but immensely in flavor.

"It would seem that *flavor* is the last touch of perfection that some pears receive; and that if the nourishment of the tree be exhausted with their growth, so that nothing is left for the last finish, they are tasteless and worthless. This is not the case however with all sorts of fruit; and exceptions may be found in the Madeleine, Summer Bon Chretien, Seckel, and Virgalieu; but I think we have no right to condemn any variety of the pear, until the tree has done its best—that is, borne fruit in a thriving condition."*

Pruning is also of great account. The Swaar and Spitzburgh never acquire their finest flavor when the branches are stunted; but thrifty branches on old trees bear as good fruit as young trees. This remark applies to other kinds and especially to Peaches.

INFLUENCE OF SOIL, AND OF THE STOCK.

As the earth is colder a few feet below than near the surface, it is highly probable that such soils as

* David Thomas, in Ohio Cultivator, 1845, p. 6.

variously favor the downward extension of roots, may modify the character of fruits, as well as the changes of seasons. Other qualities of the soil may have their part in such changes. Different trees of the same variety are known to be affected by slight shades of difference, which are often ascribed entirely to the stock, though the soil doubtless has a large share of influence. This view is further indicated by the increased luxuriance of some kinds when growing in a light soil, and of others in a heavy soil, and by the fact that other qualities are known to be hurtful or beneficial. Different degrees of fertility, often produce very material effects, both in productiveness and flavor.

There is no doubt that *stocks*, on which trees are grafted, operate in some degree in a similar way. Some, like a rich soil, assist the more rapid growth of the branches; others, like a sterile soil, retard it; hence corresponding results on the fruit may be expected. The Pear, always easily affected, is sometimes materially changed when grafted on the Quince. Melting pears are in general thus improved, and breaking pears injured. It will be observed in this case that the trees are diminished to mere dwarfs. Trifling influence on the fruit may be expected where the vigor of growth is but little lessened. All our grafted apple orchards, it will be remembered, are upon all imaginable varieties of seedlings; but a Rhode Island Greening, a Spit-

zenburgh, or a Bellflower, preserve their identity upon them all.

Salt peaches or plums, show that foreign substances may enter the juices, and modify or change the quality of the fruit, as well as poison or induce disease in the tree. Soluble substances in the soil may thus exert a sensible influence. In the same way, the peculiar character of the sap and secretions of a stock may produce a like result.

Stocks may hasten or retard ripening ; they may affect the size, color, and quality of fruit. The temperature, depth, and other characters of soils may do the same. Tender kinds are made hardier on hardy stocks, not because of any specific influence, but the usual supplies of sap are withheld earlier in autumn, and the tender wood has more time to mature—precisely similar to the planting of tender trees on sterile or rocky soils, which cause an earlier cessation of growth.*

No other influence than these can be produced by the stock upon the graft. Lord Bacon correctly remarked “that the scion overruleth the stock quite, the stock being passive only.” The change which takes place when the sap is converted into the proper juices, and thence into fruit, is effected entirely by the leaves ; hence when a pear is grafted on a

* It would be interesting to inquire why the Mayduke Cherry should frequently have ripe fruit on one branch of the tree, and green fruit on another; and why other trees occasionally present similar variations.

quince, the entire elaboration is effected by the leaves of the pear, and the perfect fruit of the pear is the result. It is only modified in quality by the slight degree of difference in the sap of the pear and quince, and by the degree of facility with which the sap of the quince stock is given to the pear. Hence the absurdity of the notion formerly held that the stock might produce a distinct specific change, analogous to that in hybrids; for so far from altering the character of the species, even the variety is only slightly modified.

"In proportion," says Lindley, "as the scion and the stock approach each other closely in constitution, the less effect is produced by the latter; and on the contrary, in proportion to the constitutional difference between the stock and the scion, is the effect of the former important. Thus, when pears are grafted or budded on the wild species, apples upon crabs, plums upon plums, and peaches upon peaches or almonds, the scion is, in regard to fertility, exactly in the same state as if it had not been grafted at all; while on the other hand, a great increase of fertility is the result of grafting pears upon quinces, peaches upon plums, apples upon white-thorn, and the like. In these latter cases, the food absorbed from the earth by the root of the stock, is communicated slowly and unwillingly to the scion: under no circumstance is the communication between the one and the other as

free and perfect as if their natures had been more nearly the same ; the sap is impeded in its ascent, and the proper juices are impeded in their descent, whence arises that accumulation of secretion which is sure to be attended with increased fertility."

As a general rule, therefore, the influence of the stock is not to be taken into account in practice, as it is usually so small, except on stocks of very different natures, as to amount to nothing perceptible. Cultivation and fertility of soil, are of incalculably greater importance. And while the effects of climate are to be attentively observed in making a selection of fitting varieties ; the improvement of those selected sorts to the highest degree of perfection, is only to be attained by culture.

INFLUENCE OF PRODUCTIVENESS.

When fruit is thick upon the branches, both size and flavor are diminished. Many kinds are rendered nearly worthless by overbearing. It is often observed that early apples and peaches, remaining last on the tree, are much more delicious than the earlier portions which ripened on crowded limbs. With some varieties, the effect of productiveness is so great as wholly to alter the character. A tree of the Heath cling, before unknown to the person who raised it, bore the first year a very abundant crop ; and the fruit, which had been recommended as of great size and excellence, was small, green, with only a disagreeable, bitter taste. In the

warmer and longer summer of the following year, the fruit, which had been thinned by the frost, was three inches in diameter, very handsome, and of sweet and excellent flavor. The importance of understanding these influences, before deciding on the quality of a new fruit, is hence at once evident. The advantages of pruning are to be ascribed in part to the same cause.

CHAPTER IV.

THE BEST KINDS OF STOCKS.

As a general rule, fruit trees do best when grafted on seedlings of their own species. Apples are best upon seedling apple stocks; pears on seedling pears; and plums and cherries on seedling stocks of their own kinds respectively. Suckers, when their roots diverge evenly on all sides, often make good stocks; but the uncertainty of finding such roots, and the inconvenience of crooked, one-sided, or stunted trees, so often produced from suckers, renders them on the whole greatly inferior to seedlings.

In some cases, stocks of a different kind from the graft are best, where particular objects are to be attained. When for instance it is intended to raise dwarf trees of the apple and pear, that they may cover less ground, or bear sooner, stocks of smaller size and of diminished growth are chosen. The quince is used as a stock for dwarf pear trees; the small paradise and the Doucin or French stock, for dwarf apples. Besides increasing the productiveness of some varieties, the quality too is changed and sometimes improved, as described in

the preceding chapter. But such dwarfs are comparatively short-lived.

Sometimes different stocks are used as a protection from the attacks of insects. For example, the peach and apricot, which are very liable to attacks of the *peach-worm*, are budded upon the plum, which very seldom suffers. The quince is often destroyed or injured by the *borer*, but the pear is exempt from this injury; hence the former may be grafted on the latter. But such expedients are not always successful. Instances have been observed where the peach-worm, not to be thwarted in this way, had attacked the apricot at the place of union on the plum, even as high as three feet from the ground. Yet, although such failures are not usual, it may be questioned whether the advantages of plum stocks are as great as many suppose. A careful attention, without which fruit trees cannot prosper, will easily keep all peach trees clear of the worm, as hereafter to be shown.

In a few cases it becomes necessary to use dissimilar stocks, from the difficulty of obtaining others. Thus, in England, it is not unusual to graft the pear on the hawthorn; and in this country, to bud the plum on the peach; from the scarcity of other stocks. Pears on the thorn, should be grafted at the ground, to prevent the deformity resulting from the more rapid growth of the former. Such pear trees flourish well; but the fruit is said to be injur-

ed somewhat in quality, probably from the more scanty supply of food from the roots. Some varieties of plums succeed well on peach stocks, if budded below the surface, and continue to bear and flourish when large trees, with no diminution in the quality of the fruit.

CHAPTER V.

PRODUCTION OF NEW VARIETIES.

THE tendency is more or less common in all plants, to vary from the character first stamped upon them. This disposition is increased by removal from their native climate or locality, and greatly by cultivation. By a constant selection of some particular quality in successive crops, a gradual removal from the character of the original is effected. Most of our finest fruits, we have reason to believe, have been gradually produced by the improvement of the original native kinds.

The improvements effected in former ages, were doubtless the result of accident, as the ancients were ignorant of the means for their systematic accomplishment. The greatest progress in the art which has been made in modern times, was effected by Van Mons in Belgium and by Knight in England.

The former, who directed his labors chiefly to the pear, produced many new and excellent varieties, by a constant and successive selection of the best seedlings. He first made a large collection of natural stocks, choosing those which, from the

appearance of the wood and leaf, he had reason to believe, would be most likely to produce the best fruit. As soon as the first of these bore, he selected the best, and planted the seeds. Selections were again made from the first fruit of these, and so on in continued succession, the best and soonest in bearing were uniformly chosen. He thus obtained fruit from the eighth generation; each successive experiment yielding an improved result on the preceding. At the fourth generation many of the fruits were good, several excellent, but a smaller number still bad. He had, in the early part of this series of experiments, no less than eighty thousand trees; hence in selecting from so large a number, his chance for fine ones was vastly greater than from a small collection; and hence too the reason why, after seven or eight improving generations, he had obtained so many hundred fine sorts. In the early stages of his operations, he found "that twelve or fifteen years was the mean term of time, from the moment of planting the first seed of an ancient variety of the domestic pear, to the first fructification of the trees which sprung from them. The trees from the second sowing, yielded their first fruit at an age of from ten to twelve years; those of the third generation, at an age of from eight to ten years; those of the fourth generation, at an age of from six to eight; and those of the fifth generation at the age of six years. Van Mons,

being actually at the eighth generation, has informed me that he has obtained several pear trees which *fruited at the age of four years.*"* When his seedlings were at the age of three or four years, he was able to judge of their appearances, though they had not as yet borne; such only were taken for further trial, as exhibited the strongest probability of excellence. It is hardly necessary to remark that in all these trials, the young trees were kept in the highest state of cultivation.

Van Mons maintained that by planting the seeds of the first crop, the product would be less liable to run back to the original variety, than where the seeds were taken from a crop produced on an old bearing tree; and to this practice he chiefly ascribed his success.

CROSSING THE SORTS.

The production of new varieties is greatly facilitated by cross-impregnation, or by intermixing the pollen and stigma of two varieties, for the purpose of procuring something of an intermediate nature. This was performed with great success by Knight. Selecting two varieties for operation, while yet early in flower, and before the anthers had burst and discharged the pollen, he cut out with a fine pair of scissors all the stamens, leaving the stigma untouched. When the stigma became mature, he

* Poiteau.

introduced the pollen, (the fine dust of the bursting anthers,) of the other variety, either by shaking the flower of the latter, deprived of its petals, over the stigma, or by transferring it on the point of a camel's-hair pencil, from one flower to the other. The seeds of the fruit, thus yielded, partake of the nature of both ; and the trees growing from them, bear fruit of various intermediate mixtures.

In performing these operations, it is necessary to use these precautions :—The flower must be deprived of its stamens before they burst and disperse their pollen ; as soon as the stigma becomes glutinous so as to hold the pollen, it must be applied ; otherwise the stigma may be inoculated with the pollen of its own or some other flower, and then the intended pollen will not take. For, a stigma once inoculated, cannot be inoculated again. It is safest to force the tree to be inoculated, a few days forward of other trees, so as to secure it from accidental inoculations by pollen floating in the air, or spread by bees.* From want of these precautions, many fancy they have obtained hybrids, when they only have natural seedlings.†

“ The sorts,” says Loudon, “ proper for crossing, appear to be those which have many qualities in common, and some different qualities. A small

* A temporary covering of gauze will exclude these insects.

† Gardener’s Chronicle.

sized apple crossed by a large sort, will be more certain of producing a new variety; but it will be almost equally certain of producing a variety destitute of valuable qualities; the qualities of parents of so opposite natures being as it were crudely jumbled together in the offspring."

Some of the best varieties thus obtained, are Coe's Golden Drop plum, from the white Magnum Bonum or Egg plum, and the Green Gage, the Elton cherry, from the White Heart, and Bigarreau; Knight's Early Black, and Waterloo, from the Mayduke and Bigarreau; the Downton pippin, the red and yellow Ingestrue, and Grange pippin, from the seed of the Orange pippin and pollen of the Golden pippin. The Bringwood pippin was produced from Golden pippin blossoms, (divested of their stamens,) dusted with the pollen of the Golden Harvey apple.*

The limits within which experiments of this kind may be successfully practiced, are narrow. Cross-fertilization rarely takes place between different species, unless they are nearly related to each other. The offspring of different species is frequently sterile, or if it possess the power of multiplying itself, by seed, its progeny returns to the state of one or the other of its parents.

But there are some exceptions. A gooseberry, currant, and black currant, are species of the same

* Loudon.

genus and nearly related, but hybrids between them have never been produced. Neither have any ever been obtained between the apple and the pear, or the pear and quince. But different species of other plants, as of the Heaths, and some of the Cacti, intermingle freely. The Rhododendron will fertilize the Azaleas, and the Red Cedar has been made to inoculate the American Arbor-vitæ, though both these examples are between plants of different genera.

CHAPTER VI.

PROPAGATION BY BUDDING AND GRAFTING, BY LAYERS AND BY CUTTINGS.

WHEN trees are raised from seeds, as already explained, there is no certainty that the same identical variety will be produced. In many cases, the shade of variation will scarcely be perceptible; in others it will be wide and distinct. It hence becomes desirable to adopt some other mode of propagation, for the purpose of multiplying varieties of peculiar excellence which already exist, instead of creating new ones. This is effected usually in four ways; 1, by Cuttings; 2, by Layers; 3, by Grafting; 4, by Budding.

I. CUTTINGS.

This is the simplest mode of multiplying a variety. It consists merely in cutting off a branch or shoot from the tree, and inserting it into the soil, leaving the upper end above the surface. The moisture of the soil supplies the sap. The buds swell, the leaves spread, and the elaborated juice for the formation of new wood passes downward in the inner bark, as in other cases of

growth; on arriving at the lower end of the shoot, it expends itself in the production of new roots, which shoot downwards into the soil. A new plant or tree is thus formed. This method of propagation is applicable to such species only as readily throw out roots, as the currant, gooseberry, quince, and grape.* A shoot should be taken of sufficient length, to contain a good portion of sap within it; and to keep it from drying, it is best to place the cutting below the surface, except one or two buds on the upper extremity. Even these may be covered with leaves or moss. Some operators are careful to cut off the lower end close to a leaf-bud, or close below a joint if the cutting is a vine, believing it facilitates more readily the emission of roots, which the thick, hard bark obstructs.

II. LAYERS.

Many plants which cannot be increased by cuttings, and indeed with great difficulty by budding and grafting, may be propagated readily by layers. This consists in bending down the branches to the ground, and covering the middle portion with soil. This portion takes root, and then the branch is separated. Layers differ from

* Cuttings of the apple and pear, are sometimes made to strike roots, when placed in very favorable circumstances under a bell glass to confine the moisture; but in open air, never. The stories which go the rounds of the papers every few years, of making trees by sticking cuttings into potatoes, or covering them with wax, are not founded on fact.

cuttings, by maintaining their connexion with the main plant, and receiving its nourishment, until roots are formed. When these are freely emitted, simply bending the middle of the branch into the soil is enough to ensure success. But in cases of difficulty, other expedients are resorted to; one of the most common is to split a portion of it up to the origin of a bud; which enables the newly forming roots to pass freely and at once into the soil, without the resistance of the thick bark, which they otherwise must pierce. Sometimes the branch is cut partly off to intercept the downward passage of the fluids and induce them to form into roots. At other times a wire ligature, or the removal of a narrow ring of bark, effects the same purpose. Burying the layer several inches under the surface is necessary to keep it in moist earth; and in drouth, moderate watering would be beneficial. A small excavation of the soil at the spot is convenient; and when the branch is stiff, it must be fastened down with a forked stick.

The excavation should be made with a spade. Use both hands in bending the shoot, so that it may not be bent too short, and break. If properly done, it will press against the *nearest* side of the hole, rest on the bottom, and rise up, pressing against the opposite side, when it should be fastened, *upright*, to a small stake. At the time of bending, a sod or other weight may be laid on to keep

it down till the hole is filled; and if the mellow earth be pressed firmly down with the foot, no forked stick will be usually necessary.

Layering is largely made use of in propagating the grape, occasionally for the quince, and sometimes for the apple. It is also of very extensive application in propagating many ornamental trees and shrubs.

III. GRAFTING.

The great number of modes described in books, have tended rather to bewilder than to enlighten beginners; the following remarks, therefore, are more for the purpose of laying down *reasons* on which success depends, than for pointing out the peculiar modes of operation, which may be varied according to convenience, provided attention is given to the essential particulars.

Propagation by grafting differs mainly and essentially from increasing by cuttings, by inserting the cutting into the growing stock of another tree, instead of directly into the soil. The stock thus supplies the sap, as the soil does in the case of a cutting; and the graft, instead of making roots of its own, extends its forming wood downwards, through the inner bark, into the stock itself. Hence there are two chief requisites for success: the first, that the graft be so set in the stock, that the sap may flow upward without interruption; and the

second, that the forming wood may flow downward uninterruptedly through the inner bark.

To effect these two requisites, it is needful, *first*, that the operation be performed with a sharp knife, that the vessels and pores may be cut smoothly and evenly, and the two parts be brought into immediate and even contact. *Secondly*, that the operation be so contrived that a permanent and considerable pressure be applied to keep all parts of these cut faces closely together. *Thirdly*, that the line of division between the inner bark and the wood, should coincide or exactly correspond in each; for if the inner bark of the one sets wholly on the wood of the other, the upward current through the wood and back through the bark, is broken, and the graft cannot flourish nor grow. And, *fourthly*, that the wounded parts made by the operation, be effectually excluded from the external air, chiefly to retain a due quantity of moisture in the graft, but also to exclude the wet, until, by the growth of the graft, the union is effected.

1. The first requisite is best attained by keeping a keen, flat-bladed knife to cut the faces, and another knife for other purposes.

2. The second requires that the jaws of the stock in cleft-grafting, press with some force, but not too much, against the wedge-shaped sides of the graft. A stock one-third of an inch in diameter will sometimes do this sufficiently; but three-quarters of an

inch is a more convenient size. In whip-grafting, the tongue and slit should be firmly crowded or bound together.

3. The third requisite is attained by close examination.

4. The fourth is accomplished by plasters of grafting-wax, and by the application of grafting-clay. Grafting-wax may be made by melting together one pound of beeswax, two of tallow, and four of rosin.* It is spread, when melted or softened, on muslin or thin unsized paper, with a brush or spatula. It is sometimes applied without plasters, in which case it should be worked with wet hands, until it may be drawn out into ribbons of wax, which are wrapped round the part. In all cases it should be applied closely, so as to allow if possible no interstices, and cover every cut or split surface otherwise exposed to the air. In cool weather, a lantern, chafing-dish, or hot brick, is necessary to soften the plasters before applying them.

The annexed figures represent the two most common modes usually adopted for fruit-trees; fig. 1, representing whip-grafting, which if well performed with the parts closely pressed together, needs no ligature to keep the graft to its place; and fig. 2, the common mode, or cleft-grafting,

* More wax and less rosin is less adhesive to the hands, but more expensive.

which, except for small stocks, is generally found best and most certain of success.

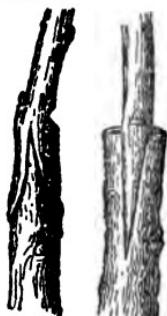


Fig. 1. Fig. 2.

It is hardly necessary here to mention that propagation by grafting and by cuttings is to be performed early in spring before the buds swell,* and that the grafts or cuttings may be cut late in autumn or at any time during winter, provided the natural moisture is preserved until they are used. A convenient mode of thus preserving them, is to wrap or imbed them in damp, not wet, moss; or bury them in a box, beneath the surface of a dry spot of earth, the box to be open downwards, and the grafts to be kept from contact with the earth by sticks across the inside of the box.

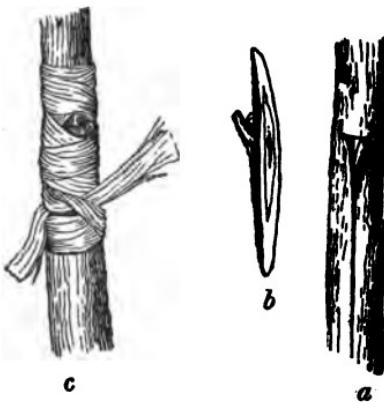
IV. BUDDING.†

This is performed by introducing the bud of one tree, with a portion of bark and a little wood adhering to it, beneath the bark of another tree, and upon the face of the newly forming wood. It is to be performed while the stock is in a state of vigorous growth. An incision is made lengthwise

* Grafts, if kept in a cold place, in a dormant state, till the leaves of the stock are expanded, may generally be inserted with success, if of the apple and pear. Cuttings are used at various seasons of the year, in hot-house culture.

† Sometimes termed “*Inoculating*.”

through the bark of the stock, and a small cut at right angles at the top, the whole somewhat resembling the letter T. A bud is then taken from a shoot of the present year's growth, by shaving off the bark an inch or an inch and a half in length with a small part of the wood directly beneath the bud. The edges of the bark at the incision in the stock are then raised a little, and the bud pushed downwards under the bark. A bandage of bass, corn-husk, or other substance, is then wrapped snugly round, covering all parts but the bud ; and even this may be covered if not very prominent, especially if the pressure be rather less than on



other parts. The pressure should be sufficient to keep the inserted portion closely to the stock, but not such as to bruise or cut the bark. Fig. 3, represents the operation ; *a* the cut stock, *b* the bud

ready to insert, and *c* the whole after the ligature is applied.

When by growth, the bandage cuts into the stock, usually in ten days to three weeks, it is to be removed. The bud remains dormant till the following spring, when the stock is cut off an inch or more above it. If cut closer, the end of the stock sometimes dies and the bud perishes. All other buds must be then removed, and all the vigor of the stock thrown into the remaining bud, which immediately commences a rapid growth.

The essential requisites for success in budding are, *first*, a thrifty, rapidly growing stock, so that the bark will peel very freely. *Secondly*, a proper time; not too early, when there is little cambium, or mucilaginous cement between the bark and the wood, for the adhesion of the bud,—nor too late, when the bark will not peel freely, nor the subsequent growth sufficiently cement the bud to the wood. *Thirdly*, wood sufficiently mature from which the buds are taken. *Fourthly*, a keen flat knife, for shaving off the bud, that it may lie closely upon the wood of the stock. *Fifthly*, the application of a ligature with moderate pressure, causing the bud to fit closely to the stock.

Various modifications have been proposed for the improvement of budding. One is to make the cross-cut at the bottom of the long slit instead of at the top, as the latter is supposed to impede the

descent of nourishment. Another is to raise the bark all on one side of the slit, making a small notch in the edge of the bark for the bud, this mode being supposed to avoid the bad consequences of the mutilation of the wood by the knife. But these modes are both inconvenient, and are found to possess no advantage in practice ; the supposed evils they are intended to obviate being too small to take into account.

Budding is performed in summer, grafting in spring, and both have their advantages. Budding is a simpler operation and more successfully performed by a novice. It is also the best means to multiply the peach and nectarine, grafting very rarely proving successful. But it requires in all cases thrifty stocks. In England, where most fruit trees do not make so rapid a growth as here, budding is less esteemed ; while from the moisture of the climate preserving grafts from dying, grafting becomes more successful.

In former ages of the world, it was supposed that grafting, the origin of which is hid in the obscurity of antiquity, could be performed between every species of tree and shrub. Roses, it was said, became black when grafted on black currants, and oranges crimson if worked on the pomegranate. But the operation is never successful unless the graft and stock are nearly allied, and the greater the affinity the more certain the success. "Varie-

ties of the same species unite most freely, then species of the same genus, then genera of the same natural order; beyond which the power does not extend. For instance, pears work freely upon pears, very well on quinces, less willingly on apples or thorns, and not at all upon plums or cherries; while the lilac will take on the ash, and the olive on the *Phillyrea*, because they are plants of the same natural order. M. De Candolle even says that he has succeeded, notwithstanding the great difference in their vegetation, to work the lilac on the *Phillyrea*, the olive on the ash, and the *Bignonia radicans* on the *Catalpa* (in all cases of the same natural order;) but plants so obtained are very short-lived."**

There are however some exceptions to this rule. Thus, the cultivated cherry, and most species of wild cherry, though of the same genus, will not agree. The pear succeeds better on the quince than on the apple, although the apple and pear are within the same genus, and the pear and quince are by most regarded as of distinct genera; the superior firmness of the wood of the quince, a quality so important to successful grafting, more than making up the difference in affinity.

Lindley mentions also some exceptions which are apparent only. In one case, the fig was supposed to grow on the olive. But the graft, being

* Lindley, *Theory Hort.*

below the surface of the soil, rooted in it, independently of the fig stock. Pliny speaks of a tree grafted to bear, on the same stem, pears, apples, figs, plums, olives, almonds, grapes, &c. This, if true, was perhaps by a similar process to that now performed in Italy, for growing jasmines and other flexible plants, on an orange stock, by the mere cheat of boring out the orange stem, through which the stems of the other plants are made to pass, and which soon grow so as to fill it closely, and to appear as if growing together, the roots intermingling. They are, of course, very short-lived.

CHAPTER VII.

SOIL, SITUATION, AND ENCLOSURES.

SOIL.

THE soil for fruit trees, as well as for farm crops, should be *good*. Whatever kind will usually promote a vigorous growth of corn or potatoes, will in general be best for fruit trees. Sterile soil is unfavorable for both; but especially so for the latter, for while it only lessens in *quantity* the growth of farm crops, it lessens the quantity and greatly injures the *quality* of fruit.

Good soils vary in many particulars; but as a general rule, one which is dry, firm, mellow and fertile, is well suited to the cultivation of fruit trees. It should be deep, to allow the extension of the roots; dry, or else well drained, to prevent injury from stagnant water below the surface; firm, and not peaty or spongy, to preclude disaster from frost.

Very few soils exist in this country, which would not be much benefited, for all decidedly hardy kinds, as the apple and pear, by good manuring. Shallow soils should be loosened deeply by heavy furrows and manure; or if the whole surface cannot be thus treated, a strip of ground eight feet wide, where the row of trees is to stand, should be ren-

dered in this way deep and fertile for their growth. The manure should be very thoroughly intermixed with the soil by repeated harrowings. The kinds of trees which will not bear so much fertility, are those brought originally from warmer countries, and liable to suffer from the frost of winter; as the peach, nectarine, and apricot; for they are stimulated to grow too late in the season, and frost strikes them when the wood is immature.

Clayey and light soils in some cases require opposite management. The former, for instance, is much benefited by the admixture of chip-dirt, which renders it looser, lighter, and more retentive of moisture. But on light soils the effect is not so beneficial. Hence, while eminent success has attended the use of chip-dirt on heavy soils, on dry gravel it has in some cases been found decidedly injurious.

Peaty and spongy soils are particularly injurious to tender fruits. Such soils become very warm by day, and radiate the heat rapidly in clear frosty nights; hence peaches and apricots generally perish when growing in them, the heat of the sun promoting a rapid succulent growth, which is the more easily destroyed by the succeeding intensity of cold.

SITUATION.

Trees of a very hardy nature, such as the apple, will mostly succeed well in any situation, whether

high or low, if the soil be good. But with the more tender kinds, the case is different. Peaches for example, if placed in a low, warm spot, are more liable to destruction, than if on one more cool and elevated. The buds are started in winter by the reflected heat of warm localities. This fills them with moisture, even when they increase little in size ; and the frosts to which low sheltered places are peculiarly liable, subsequently cause their death. Hence a cool elevated situation, by obviating this evil, is to be preferred.

Practice accords entirely with theory on this subject. An early settler of Wayne County, N. Y. succeeded in raising crops of peaches for twenty-three successive years,—and all but two of them abundant,—by planting his peach orchard on a hill a hundred feet above his dwelling ; although one crop in five is usually destroyed on the ordinary level, and nearly half the crops in low places. Many other experiments have given a similar result. There is little doubt that many parts of the northern states, where the peach is wholly uncultivated, would admit of its successful culture, by leaving the low and warm valleys, and occupying the neighboring heights.

But there are some apparent exceptions. Where a deep lake, not freezing in winter, lies in the bottom of a valley, its softening influence on the frosty air prevents injury. Sometimes the effect

of unfavorable soil more than overbalances that of situation. In some of the hilly parts of western New-York, where the highest land is peaty, spongy, or springy, and the valleys dry and firm, the latter are found best for the peach. "Some years ago, we drained a shallow swamp; and though the situation is high and airy, peach trees of the best bearing kinds planted there, have always been unproductive."*

ENCLOSURES.

This subject is of the most vital consequence to all who would cultivate fine fruit. The morality of some Americans, whatever it may be on other points, is, on this, far behind the ages of barbarism. A large part of our population is brought up to regard fine fruit,—wherever it may be growing,—whatever of money, and time, and labor, and patience, it may have cost the public-spirited owner,—as common plunder. Hence the great uncertainty and slim hope, with which many regard all attempts to possess this delicious luxury. Why the young man, who pilfers from the pocket-book, is to be scouted from society,—while he, who takes what has cost the owner more, what he values more, and which money will not replace, is allowed to run at large, is one of the anomalies of the times.†

* D. Thomas, Trans. N. Y. State Ag. Soc. Vol. I. See some additional facts under the head *Peach* in this work.

† "The native fruit of a thickly populated country, grow-

But such is the evil, and it becomes cultivators to guard against it as effectually as possible. Apples, except the early varieties, are not much liable to be stolen; but all early fruit, including cherries, pears, apples, plums, apricots, and peaches, and all the delicious sorts which ripen through autumn, are pre-eminently liable to the attacks of these relentless marauders. Hence all these kinds should be effectually protected by a thorn hedge. A good dog is often a great help; but a hedge, which a boy cannot pass, is most quiet and secure.

The English hawthorn has been much used in America for hedges, and in some cases has con-

ting without culture, and free for all, has doubtless had its share in producing this laxity of morals. 'I would sooner have a hundred Irishmen round me than one Yankee,' was the declaration of a sufferer, whose fruit had been plundered near the line of the Erie canal, when that great work was in progress. But Europeans are generally more exemplary on this point than Americans—shame on us! When Professor Stowe was in Prussia, where the roads are lined with fruit trees by order of the government, he observed a wisp of straw attached to particular trees, to protect the fruit; a sufficient guard; but he suggested to the coachman, that in America, it might only prove an invitation to plunder. 'Have you no schools?' was the significant reply.

"Yes, we have schools; but how many where the child is taught to respect his neighbor's property? Too often he acquires literature and vice at the same time. The state of New-York is famous for her schools and her prisons: the latter to supply the defects of the former system, which they do however, very imperfectly. Better let the mandate go forth that the *morality of the Bible* shall be *one* of the chief objects of instruction. TEACH HER CHILDREN TO BE HONEST, and then with science and literature, a foundation for true greatness and prosperity would be laid."—*David Thomas, in Trans. N. Y. State Ag. Soc. Vol. I, p. 223.*

tinued to succeed well. But the heavy losses from its sudden death in others, render it too uncertain for dependance. The Newcastle thorn, (*Crataegus crus-galli*,) appears to have failed in no case whatever; and its formidable spines render it effectual against all intruders. It is, however, hard to procure; and in common with all trees for hedges, it needs constant cultivation of the soil while young, and cutting down until the growth becomes impenetrably thick. For a fruit-garden, however, other trees or shrubs may be used, provided a high board or picket fence is kept up besides. This fence will keep out cattle, and all law abiding animals; while a row of terrific thorns will keep out lawless ones.*

* The Michigan Rose, of very vigorous growth, and sufficiently prickly, is very formidable in conjunction with a picket fence. It may be questioned whether any marauder would attempt to cross it where it grows thick, over-topping and winding among the pickets. It grows freely from cuttings set in a rich mellow soil.—D. Thomas.

CHAPTER VIII.

TRANSPLANTING.

"WHEN young trees are taken from the nursery, inquiry is often made how soon they will come into bearing? It is a very proper question, and it would be a proper answer to say:—Very much according to the treatment they shall get. When they are set in holes cut out of a sod, just large enough to receive the roots with some crowding, and are then left to take care of themselves, we have no right to expect them to come soon into bearing, nor to bear much when they do. Neither half starved cows, nor half starved trees will be found profitable. In the latter case especially, the interest on the purchase money is generally lost for some years, and not unfrequently the purchase too; but we hardly ever lose a tree in good condition, set in mellow ground, which is kept mellow."*

It is obvious that if a tree could be removed with all its roots, and placed in its new situation precisely as it stood before, it would suffer no check in

* D. Thomas, in Trans. N. Y. State Ag. Soc. Vol. I.

growth. The nearer, then, we can approach this, the greater will be our success.

Hence a first and essential point is to remove the tree with as little tearing of the roots as possible. The spade should be set into the earth at a distance from the tree, and the whole carefully lifted, not forcibly drawn, from the soil. The roots should then be dipped in thick mud, prepared for the occasion, which will coat them over, prevent them from drying, and assist in forming a close bed of earth round them when they are set out. Nurserymen, who send trees to a distance, sometimes neglect this; if so, it should be done as soon as they are received by the purchaser.

"Newly planted trees being acted on as levers by the wind, often press the earth round their stems aside, and make an opening down to their roots, which in consequence suffer from both drouth and disturbance. To prevent this disaster, it is there-

fore important that stakes should be provided to support and stiffen them. If driven before the trees are planted, they may be erect, as in fig. 4; if driven afterwards, they may be slanting; and in both cases, straw bands should be first wrapped once round, to prevent the trees from chafing."*



Fig. 4. The hole should in all cases be large

* David Thomas, in Trans. N. Y. State Ag. Soc. Vol. L.

enough to receive freely all the roots when spread out, without bending, just as they lay in the soil before. Fine mellow earth is to be filled in among them, and the fingers used to spread out all the fibres during the operation. No empty space among them should be left; but the roots should be closely imbedded on every side, and especially under the middle of the tree. Downing says, "Nine-tenths of the deaths from transplanting, arise from the hollows left among the roots, by a careless and rapid mode of shoveling in the earth." A pail of water dashed in among the roots before the hole is quite filled, is eminently serviceable in settling the soil about them, and should not be omitted. The surrounding soil soon absorbs all the superabundant water, and leaves them in fine condition for growing.

When roots are bruised or mutilated in removal, their broken and ragged extremities remain open to the introduction of water, and decay follows. If all such parts are pared off smoothly with a sharp knife, the vessels contract, and the wound heals by granulations.

It is desirable that nearly the same depth should be preserved, when trees are transplanted, as before. But the mellow earth should rise two or three inches above the surrounding surface, to allow for its subsequent settling.

The size of the holes should depend somewhat

upon circumstances. If the soil has been already rendered fertile and mellow to the depth of nearly a foot, very large holes are not needed. But where this has not, or cannot be done, holes not less than six feet in diameter and fifteen inches deep should be made. The soil should be placed by the hole ready for filling in again; and the less fertile subsoil scattered back out of the way. If this large hole is then filled with rich mellow mould, it will form a fine bed for the easy and rapid extension of the new roots, which otherwise would have to force their way slowly through a hard subsoil. The resulting advantages, in thriftiness and fine fruit, will many times repay the cost of the additional labor.

Fresh manure should never come in contact with the roots; but earth enriched by previous manuring and cultivation, is of very great advantage.

Much discussion has taken place on the relative advantages of autumn and spring transplanting. When the work is well done, as it always should be, both are successful. For apple and other hardy trees, autumn is perhaps rather the best, as the soil becomes well settled about the roots, and the trees commence growing without interruption in spring.*

* The remark of Dr. Lindley that *early fall* transplanting is decidedly best, by permitting the formation of small roots and a consequent establishment of the tree in the soil before winter, though applicable to the moist climate and long mild autumns of England, is not so here, where the growth while

The more tender trees, as apricots and peaches, removed to a colder region, may be in more danger, if the roots have been much mutilated and the setting out badly done. A neighbor purchased fifty peach trees in the autumn, and lost half of them the following severe winter; another bought fifty the next spring, and lost only one. Was this a conclusive proof that spring planting was best? By no means; for in the former case they were set out in grass land, and received no culture; in the latter, they had the best care. The same autumn another purchaser, saved all his peach trees by good management; the same spring another lost most of his by neglect. We may hence infer that good management is of incomparably more importance than the season of the year.

But there are many things to be taken into account in drawing conclusions. It has been remarked that tender trees taken to a colder climate may be in danger of winter frosts. Good, thrifty, and well ripened wood, however, where the trees have grown on high, dry, firm soil, even from a warmer region of country, would be much safer than trees of succulent growth and badly ripened wood, from a colder. So again, trees equally hardy, might perish when set out on a low, sheltered place, or on a wet soil, while they would endure the severest

it lasts is more rapid, its cessation more sudden, and the dryness of the air unfavorable to removal before growth ceases.

rigors of our winters on a drier and more elevated piece of ground.

Again, success has sometimes attended careless transplanting; while on the other hand, the greatest care has resulted in loss. In the first instance, the trees may have been in the best condition, the roots uninjured, the soil just right, and every attending circumstance favorable. In the other, every thing may have been done right, but some accidental disaster proved ruinous. A neighbor, as an instance, set out several peach trees in autumn in a first rate manner; but his soil was low, and became soaked with water in winter, causing their death. Removal from high and exposed, to low and frosty ground, or the reverse, may often influence the result. Even a wet subsoil, where the surface has been dry, has destroyed tender trees in winter, as the apricot, without removal.

Again, when the soil is a heavy clay, and holds water like a tub, tender trees are in great danger from autumn transplanting, unless provision is made for draining the holes; which may be effected by running a deep furrow from one hole to the other, along the line of trees, and using brush, cornstalks, or straw, as a temporary under-drain for the water to soak away.

It sometimes happens, when trees are received from a distance after long delay on the road, that they become dry and withered, and give little hope

of growing. They may be often saved however, by burying them wholly in the earth, until they become plump by the absorption of moisture into the stem and branches. Some put the trees in water half way up the stems for a day or so.

The question is often asked, How large may young fruit trees be, for safe removal? This depends very much on their management previously, as well as at the time of the operation. If they have been occasionally transplanted while yet in the nursery, thus shortening the long roots, and increasing in number the short ones, they are easily taken up without mutilation, and the danger is greatly lessened in every case. Trees of small or moderate size, meet with little check in growth, where this preparatory work has been performed; and those much larger are transplanted with safety, whose size would otherwise almost preclude it. In some European nurseries, it is common to keep fruit trees until they bear, keeping the roots short, so that the purchaser examines the fruit on the tree, when he makes a selection.

The apprehended danger from transplanting trees may be exceedingly reduced, if not wholly removed, by an attention to the requisites already laid down, viz:—

1. Carefully digging up the tree.
2. Pruning off all bruised parts.
3. Immersing the roots in mud.

4. Filling large holes with rich mellow earth.
5. Staking to prevent injury by the wind.
6. Filling up closely all empty spaces among the roots.
7. Spreading the small roots out on all sides.
8. Setting the trees no deeper than before.
9. Selecting good, dry, firm soil, and avoiding standing water on or below the surface.
10. Occasional previous transplanting to prepare the roots.

CHAPTER IX.

CULTIVATION OF THE SOIL.

THE importance of good transplanting has been already noticed ; though few perform it properly.

There is another department in the care of fruit trees, still less known and appreciated, and still more important ; perhaps not so much so in itself as from its almost universal neglect, and the consequent disastrous results. This is thorough cultivation of the soil. For, of many hundreds of trees which the writer has seen transplanted by various cultivators, more *have been lost from NEGLECTED AFTER-CULTURE, than from all other causes put together.*

Persons who purchase young trees treat them variously, as follows :

1. Some kill them at once by drying them in the sun or wind, or freezing them in the cold.
2. Others kill them by crowding the roots into small holes in hard ground, where they can never flourish, and rarely live.
3. Others set them out well, but that is all. This done, they consider the whole work as finish

ed. The trees are suffered to become choked with grass, weeds, or crops of grain—some live and linger, others die under the hardship ; or else are broken off by cattle, or broken down by the team which cultivates the ground.

An intelligent friend purchased fifty very fine peach trees, handsomely rooted, and of vigorous growth ; they were well set out in a field containing a fine crop of heavy clover and timothy. The following summer was very dry ; and a luxuriant growth of meadow grass nearly obscured them from sight. What was the consequence ? Most of them necessarily perished.

Another person bought sixty, of worse quality in growth ; he set them out well, and kept them well cultivated with potatoes. He lost but one tree ; and continuing to cultivate them with low hoed crops, they now promise to afford loads of rich peaches, before the dead stubs of his neighbor, just mentioned, have disappeared from his grounds.

Another neighbor a year ago bought fifty good trees. Passing his house late in summer, he said to me, "I thought a crop of wheat one of the best for young peach trees ?"—"Just the reverse ; it is one of the worst—all sown crops are injurious, all low hoed ones beneficial."—"Well," answered he, "I have found it so—my fifty trees all lived it is true, but I have lost one year of their growth by my want of knowledge." His trees were examined ;

they were in an excellent soil, and had been well set out. All the rows but one had stood in a field of wheat ; that one was hoed with a crop of potatoes. The result was striking. Of the trees that stood among the wheat, some had made shoots the same year, an inch long, some two inches, and a very few, five or six inches. While on the other hand, on nearly every one that grew with the potatoes, new shoots a foot and a half could be found, and on some the growth had been two feet, two and a half, and three feet. Other cases have furnished nearly as decisive contrasts.

An eminent cultivator of fine fruit, whose trees have borne for many years, says in a late letter, " My fruit garden would be worth twice as much as it is, if the trees had been planted in thick rows two rods apart so that I could have cultivated them with the plough. Unless fruit grows on thrifty trees, we can form no proper judgment of it. Some that we have cultivated this season, after a long neglect, seem like *new kinds*, and the flavor is in proportion to the size. Bearing trees often stand in thick grass, and poor crops and poor fruit are the usual result ; and the nurseryman who sold them is not unfrequently pronounced a rogue for thus distributing worthless kinds, when good cultivation would wholly change their character.

The "*thick rows*," two rods apart, spoken of in the preceding extract, may be composed of trees which

stand from six to ten feet apart in the rows. This mode admits of deep and thorough cultivation, and the team can pass freely in one direction, until close to the row, where the soil need not be turned



Fig. 5.

up so deeply, or so as to injure the roots. Fig. 5 exhibits this mode of planting; and Fig. 6, another mode, where the trees are in hexagons or on the corners of equilateral triangles, and are thus more equally distributed over the ground than by any other arrangement. They may thus be cultivated in three directions. For landscape effect, this is undoubtedly better than any other regular order.

Trees are frequently mutilated in cultivating the ground with a team; to obviate this difficulty, arrange the horses when they work near the line of trees, one before the other, *ad tandem*; let a boy ride the forward one, use long traces, and a short whipple-tree, and place the whole in the charge of a careful man who knows that one tree is worth more than fifty hills of corn or potatoes, and no danger need be feared.

When it becomes necessary for trees to stand in grass, as in some instances near dwellings, a circle of several feet round each tree, must be kept mellow

Fig. 6.



Fig. 8.

by the spade. The work should be shallow near the tree to prevent injury to the roots, and gradually deepen as it recedes. This operation when repeated several times during summer, has been known to increase the growth five fold. But a not less important result is the exclusion of the mice, for which this is by far the most effectual method, if the surface is raised nine or ten inches round the tree just before winter. The grass no longer affords these animals any hiding place; and the embankment round the stem prevents the collection of deep snow. It proves completely effectual. Fig. 8 represents the mode in which this embanking should be done.*

Among the crops which are best suited to young trees, are potatoes, ruta bagas, beets, carrots, beans, and all low hoed crops. Corn, though a hoed crop, is of too tall a growth, shading young trees too much by its formidable stalks. All sown crops are to be avoided,† and grass is still worse. Meadows are

* The writer has often saved young trees of the pear and apple, which have been girdled by mice, by fitting in small pieces of wood with the fresh bark, so as to restore the connexion between the two severed portions of the bark, covering the whole with grafting wax.

† Peas are by many regarded as a good crop for orchards. They are much worse than corn which is kept hoed, though

ruinous. An acquaintance who purchased a hundred peach trees and placed them in meadow land, lost most of them, by the overgrowth of the grass; and the following winter the mice, who avoid clean culture, destroyed the remainder. Every one was lost. A clean, mellow, cultivated piece of ground, kept so a few years, might have saved the whole of them, and brought them soon into bearing.

the corn shades the young trees more. A friend had a large peach orchard sown with peas, and bordered on one side with corn, in which one row stood. Such was the benefit to the peach trees, from the hoeing given to the corn, that the row standing in it was conspicuously marked out by the deeper green of its foliage, at the distance of half a mile.

CHAPTER X.

PRUNING; AND BUDDING AND GRAFTING NEW TOPS ON OLD TREES.

FRUITS are acid in cold summers, and comparatively destitute of flavor. Forced fruit, grown in winter when there is little light, cannot compare in quality with that ripened under the full blaze of a summer's sun; and melons, grown in frames covered with mats, possess none of the luscious flavor of those cultivated in the open air. Hence the advantage of a free admission of light and air among the branches of fruit trees, instead of allowing them to be covered with an impenetrable shade of leaves.*

A distinguished practical writer says, "The advantage of pruning apple trees is generally known; and unless many of the limbs are cut out, some of the finest varieties become comparatively diminutive and insipid. The same care, however, is rare-

* The position, with regard to shade or sunshine, where some fruits grew, may be ascertained by their color. This remark is very applicable to the Spitzenerburgh. Such as have been fully exposed to the sun are of a deep red, and the flavor is rich in proportion to the deepness of the color; while such as grow in the shade are pale and insipid. Hence the necessity of good pruning.—*D. Thomas.*

ly extended to other fruit trees. When the twigs become stunted and mossy, sometimes they are trimmed by the tempest, or broken down by an untimely fall of snow ; and then the benefits of pruning are manifest, even when done in that rough style. It is better, however, to depend on art than accident. As a general rule, the best flavored fruit of the kind grows on the most vigorous branches well exposed to sun and air ; and with this idea *constantly before us*, we shall hardly do amiss when we apply the axe, the saw, or the chisel ; though we may specify that cross branches should be lopped, and thrifty shoots that have room to spread, should be saved.”

There is, however, more care and judgment needed in pruning large trees, than perhaps any other operation in their management. It is next to impossible to give particular rules, as circumstances vary so much that no two trees are to be treated precisely alike.

The best practice, undoubtedly, is trimming moderately every year or two, as trees may need it, which obviates the necessity of cutting away much at a time, or making large wounds by sawing off heavy branches.

A very common error in pruning old trees, consists in trimming up the branches to a height of ten or fifteen feet from the ground ; which, without much benefiting the growth of the tree, renders its

appearance extremely unsightly, and precludes the possibility of gathering the fruit without great difficulty.



Fig. 9.

Fig. 9, represents two specimens of bad pruning, such as are frequently seen. Fig. 10, shows how they ought to be trimmed, to cause a new,

thrifty and neat head, not so high as to be above easy reach, nor so low as to prevent the cultivation of the ground.



Fig. 10.

In heading down all large trees, it will be obvious that the broad wounds need a

covering; the best, is a mixture of tar and brick-dust, applied hot to the fresh surface. A portion of the branches should always be left to shade the

south-west side from the hot sun, until new branches have grown.

"Nothing," says A. J. Downing, "is more general, of late years, than complaints of the short period of productiveness in the peach tree, throughout the middle states. Although this is often owing to the worm, which girdles the tree at the root, yet the almost total neglect of pruning is a frequent cause of sterility and decay. When left to itself, the interior of the head of the tree becomes filled with small dead branches, and the trunk and larger limbs bark-bound and moss-covered; the whole tree is enfeebled; leaves are only produced at the extremity of the long branches, and the fruit borne, if any, is comparatively worthless."

A convenient time of year for pruning bearing apple trees, is late in autumn and winter. The wounds dry, and the vessels contract, and prevent the flow of sap from them in spring, which always takes place when the work is done while the sap is first in motion. After a time, however, the demand upon the system by the newly formed leaves, becomes so great that there is no surplus, and the effusion of the sap from the wound ceases. Hence, summer has also been found a favorable time; although the leisure season of winter gives it the preference. All wounds, more than an inch in diameter, should have a coating of tar and brick-dust.

Small trees may be pruned with safety at any season of the year. Summer is usually found to be the most convenient.

When a branch or portion of a tree is cut off, the vigor of the sap from the roots is thrown into the rest. If, for instance, there are fifty leaf buds on a young tree, and all the buds are removed but one, the whole strength will be thrown into that one; it will receive all the sap, and soon form a single thrifty stem of itself. It has hence been thought that pruning young trees closely when transplanted, would be beneficial in the same way; but it must be remembered that the roots of a transplanted tree are not in the state of vigor which they would otherwise possess. On the other hand, the great object is to restore the roots, which are shot forth only in proportion to the action of the leaves. As many of the branches and leaves, therefore, should be suffered to remain as the case will admit; for if there be too many, the perspiration from them will exhaust the tree faster than the roots will restore. When, therefore, the roots are but little injured, little or no pruning will be advisable; and it is only to be resorted to in proportion to the amount of mutilation of the roots.

It often happens that fruit on large trees is worthless, and it becomes an important object to change the top, by grafting or budding it with some better variety. In this case, instead of cut-

ting off large branches and grafting them at once, it is better to prune the top in part, as shown by Fig. 10, page 76, which will cause an emission of vigorous shoots. These are then budded or grafted with ease and success. And, as the grafts gradually extend by growth, the remainder of the top may, by successive excisions, be entirely removed. Where trees are not too old, and the ground is kept cultivated, good sized trees are thus obtained much sooner than by setting out young ones. But those which are old, crooked, stunted or diseased, should be rejected at once.*

* It may perhaps be expected that something should be said on wall-training, and on espaliers. The former, though highly essential in the cool, equable climate of England, where so much is gained by a warm reflecting wall, and so little feared from intense winters, has been little tested in this country, though doubtless it would prove of great service in the *early ripening* of many of our *hardy fruits*. The latter, which consists merely in the horizontal training of the branches in two opposite directions from the tree, is used in gardens, where little room can be afforded for spreading tops.

NOTE.—The abuses which have been practiced under the name of pruning, have led some good cultivators to reject it entirely for apple trees, and to substitute good cultivation and liberal manuring. The latter will always be found of great importance, but cannot wholly supersede the necessity of occasional, moderate and judicious thinning of the branches, which might otherwise, as the tree advances in age, become too much thickened and stunted in growth, to furnish fine, large, well matured specimens of fruit.

CHAPTER XI.

CAUSES OF FRUITFULNESS.

WHATEVER tends to a rapid circulation of the sap, and to increase the growth of a tree, causes also the formation of leaf buds instead of flower buds. On the contrary, whatever tends to an accumulation of sap in any part, or to retard its circulation, induces the production of flower instead of leaf buds. When trees are young, and the bark and wood soft and flexible, the sap flows freely and without check ; hence, leaf buds and the vigorous growth of branches are the result ; but as trees become older, and the bark and other parts more rigid, they appear to offer more resistance to a free circulation, and hence the production of flowers and consequent fruitfulness of the tree.

This principle enables us to apply artificial means at pleasure for the promotion of the same objects. When trees are young and small, a rapid growth and the attainment of size is desirable, which is given by enriching the ground, and thorough and constant cultivation. A neglect of these operations, would check free growth and cir-

culation, and cause the tree to bear. This would, however, be at the expense of the future vigor and size of the tree, and of the size and excellence of the fruit. Indeed, it often happens, that with the best treatment, trees will bear as young as their ultimate success requires.

There are, however, some varieties, which, in rich soil, continue growing a long time in an unproductive state. Fruitfulness is caused in various ways. 1. *By neglecting cultivation*, or suffering grass to grow under them, which diminishes their growth. 2. *Pruning the roots* beneath the surface, by cutting off a part of the larger ones, causing the same result. 3. *Ringing the branches*, or removing a small ring of bark round them, which prevents the fluids from flowing back or downwards, and consequently induces their accumulation, to the formation of flower buds. 4. *Bending the branches downwards*, causing a similar accumulation with a like result. 5. *Grafting on dissimilar stocks*, which prevents a free flow of sap and juices at the point of junction.

1. Suffering grass to grow among trees, though beneficial in some very rare instances, is not on the whole advisable. The loss in the quality of the fruit is too great, and is not balanced by the advantages. The complaint of unfruitfulness has been more frequently applied to the pear; but a selection of many new sorts, originated in the present

century, and which bear while yet very young, entirely obviates the difficulty.

2. *Pruning the roots*, is of recent invention, and in some instances has proved eminently successful, but has not as yet been sufficiently tested in this country.

3. *Ringing the branches* is effected by taking out a narrow ring of bark, extending round the branch. By obstructing the downward descent of the juices, and by their accumulation above the ring, it not only causes fruitfulness, but frequently alters the appearance and quality of the fruit. In some cases, it has doubled the size; in others it has brightened the colors. In the Court Pendu apple,* the colors are changed from green and dull red, to brilliant yellow and scarlet. But Lindley says, "If performed extensively upon a tree, it is apt, if not to kill it, to render it incurably unhealthy; for if the rings are not sufficiently wide to cut off all communication between the upper and lower lips of the wound, they produce little effect, and if they are they are difficult to heal. For these reasons, the operation is but little employed."†

* An English variety.

† Many years ago I had a tree of the Mammoth Sweeting, which had two principal branches. It comes into bearing very tardily; and I became very impatient to see the fruit. I therefore drew my knife and cut through the bark transversely, forcing open the bark by straining the knife sideways, as I drew it along an inch or so at a time; so that when the ring round the branch was completed, it had a zig-

4. *Bending the branches downwards*, by changing their natural position, as well as causing a partial obstruction where bent, is said eminently to promote their fruitfulness.

In all these modes, it must be remembered that the desired result will not be produced at once, as the first year is occupied in the formation of flower buds; and the next in their growth into fruit. This delay, however, will not take place, where the difficulty consists merely in the fruit *not setting*, the buds being already formed.

5. *The influence of the stock*, when it differs in nature from the graft, is often of importance. The more widely they differ, the greater will be the effect. Thus, when pears grow upon pears, the effect is the same as when not grafted at all. But pears on quinces are attended with an increase of fertility. Hence the quince stock is adopted for some otherwise sterile varieties. Such trees however, are of more limited duration.

These artificial modes of inducing fruitfulness are not to be recommended for general practice. It is true that trees will yield fruit sooner; but heavy crops from young trees are not desirable, as stunt-

zag appearance. Observe that no bark was cut out, though the wood was scraped. This operation was very effectual however. The next season that branch bore plentifully, while the other branch remained as unproductive as before. The cutting never appeared to injure the branch.—*D. Thomas.*

ing the tree and inferior fruit are often the consequence. Let them grow freely for a few years, and the amount ultimately obtained from them will be the greater. Indeed, the period of fruitfulness is often hastened by cultivation and retarded by neglect. Except for the sake of experiment, the preceding modes are not to be applied until trees are large, when most varieties will bear sufficiently without them

CHAPTER XII.

IMPLEMENTS, &c.

THE more common tools needed, are the shovel, the spade, and the hoe, for digging holes, transplanting, and cultivating the ground. The rake is useful in mixing manures with the soil for filling the remote parts of large holes.

INSTRUMENTS.

The pruning-knife, (fig. 11,) is a large hooked



Fig. 11

knife, for removing useless branches. The pruning-saw is needed in taking off larger limbs; attached to a handle several feet long, it will reach those at a distance from the ground. The pruning chisel, set on a pole or long handle, is used for the smaller branches, by a stroke of the mallet. The



Fig. 12.

budding-knife, (fig. 12,) should have a broad, flat

blade, the edge of which is to be rounded outwards for the more ready incision of the bark.



Fig. 13.

A grafting-tool, (fig. 13,) described in the Cultivator, vol. IX, p. 55, is useful in grafting large apple trees. It may be made of iron, the edge set with steel. It is used for splitting the stock, after it is sawed off and pared. The part A should be two inches broad with a sharp edge, which should curve inwards, that the bark, in splitting, may be cut first, to give it a smooth flat face. The wedge B opens the stock to receive the graft. By the hook C, it is hung on a twig close at hand, when not in use. Grafting wedges for common use, may be made by grinding down a large sized cut nail.

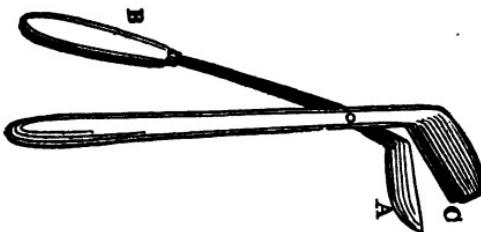


Fig. 14.

A great improvement in grafting was made by Abel Thomas of Cayuga county, N. Y., by the invention and use of the grafting-shears. They consist of a short thin blade of the best steel, A, fig.

14, two or three inches long, set at an angle of about a hundred and twenty degrees with the handle B, which moves it, against a concave bed in the wooden piece, C. The angle which the blade and its bed form with the handles, imparts a *sawing* motion to the knife, which renders it more effective. It may be used on stocks an inch or an inch and a half in diameter. Pressing the top of the stock from the operator with one hand, it is cut off with remarkable ease by a single stroke given to the shears with the other hand. Another perpendicular stroke slits the stock for the graft, leaving a perfectly smooth face cut for its reception. The expedition and perfection of the work is thus greatly facilitated.

Small shears attached to a pole and worked by a cord, (fig. 15) are useful for cutting grafts on tall



Fig. 15. trees; in removing the eggs of caterpillars, (see chapter on the apple;) and in taking off fine fruit to prevent bruising, by attaching a basket to the pole immediately under the shears. Apples, and some of the harder fruits, may also be gathered with an iron hook or large bent nail, in the end of a pole, to draw the fruit from the branch, caught in a basket just underneath.

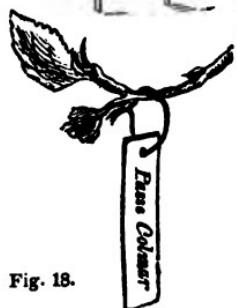
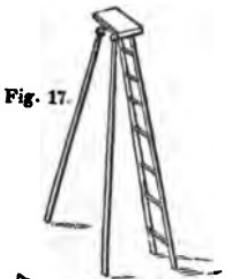
In using the long handled pruning-saw, the pru-

ning-chisel, the graft-cutter, or the fruit-gatherer, the operator may stand on a ladder or high stool, as an additional assistance in reaching the higher parts of the tree.

Self-sustaining fruit-ladders are very useful in gathering fine fruit, to prevent mutilation and bruising of the bark and branches. Fig. 16, is one of small size and simple construction, is easily carried in one hand, and will raise one's feet a yard or more from the ground.



Fig. 16. It consists of a small piece of light plank at the top, supported on legs not larger than common chair legs. Fig. 17, represents one from eight to twelve feet high, the two single legs moving on joints, for closing against the ladder in carrying, and spreading like a tripod in setting up under the tree.



Labels for standard fruit trees are often needed to preserve the names. Fig. 18, represents a simple kind, made of a slip of wood three inches long, hung

to the branch by a loop of wire, of which copper is best. The name will last several years, if written with a pencil on a very thin coat of fresh white paint. Zinc labels, written on with a mixture of two parts verdigris, two of sal-ammoniac, one of lamp-black, and forty of water, well mixed and dissolved, are said to be much more durable. Lead labels, (fig. 19,) stamped with type, and suspended with copper wire, well twisted against the hole,

Fig. 19. to prevent wearing by the motion of the wind, are still more lasting. Fig. 20, shows the

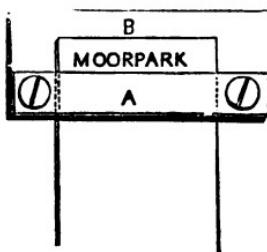
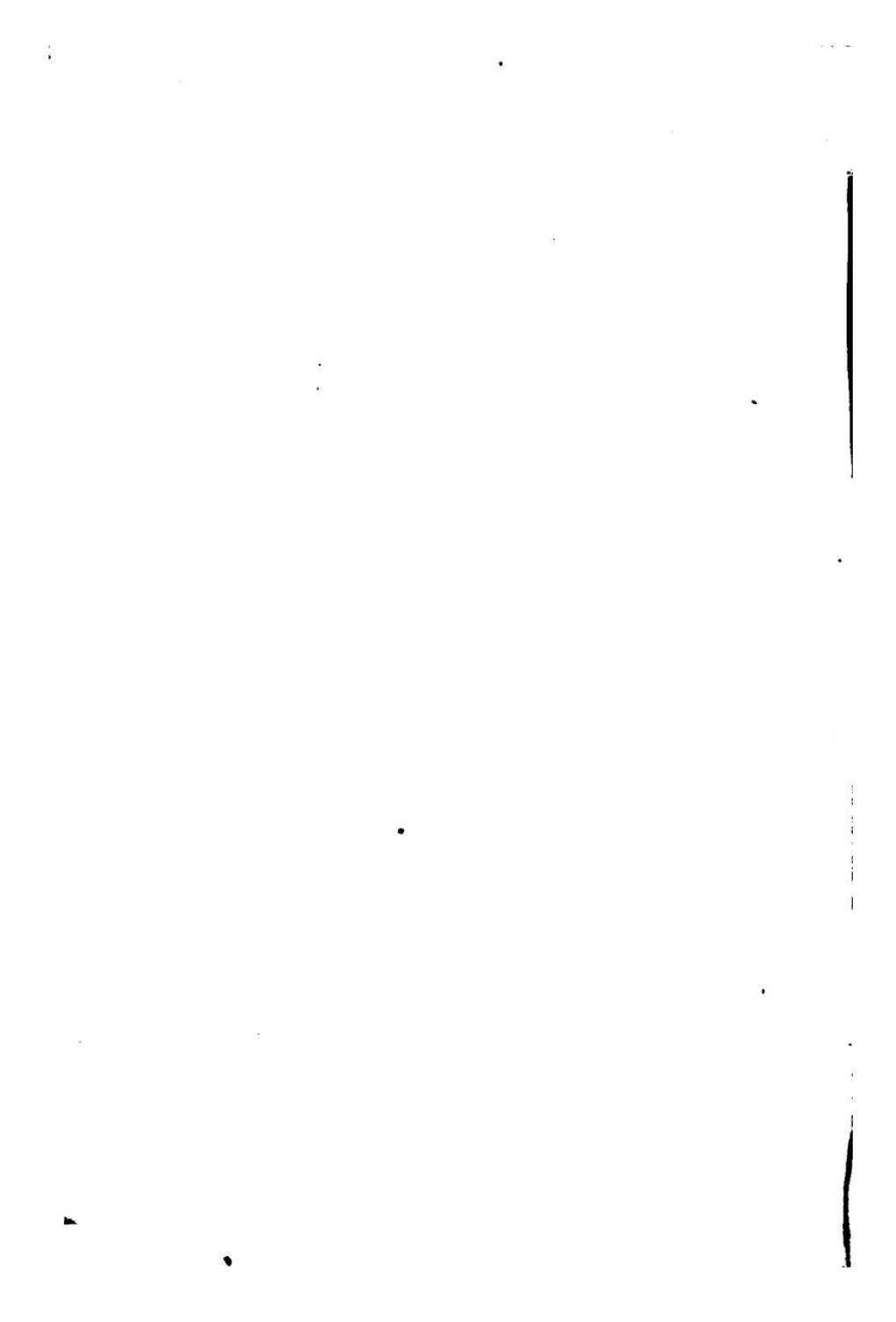


Fig. 20. mode of stamping, by sliding the sheet lead between two plates of iron, A, B, screwed together, and setting the types successively against the upper plate, A, and stamping one at a time. The letters are thus kept in a straight line. The imprinted end of the sheet lead is then cut off, and forms the label.*

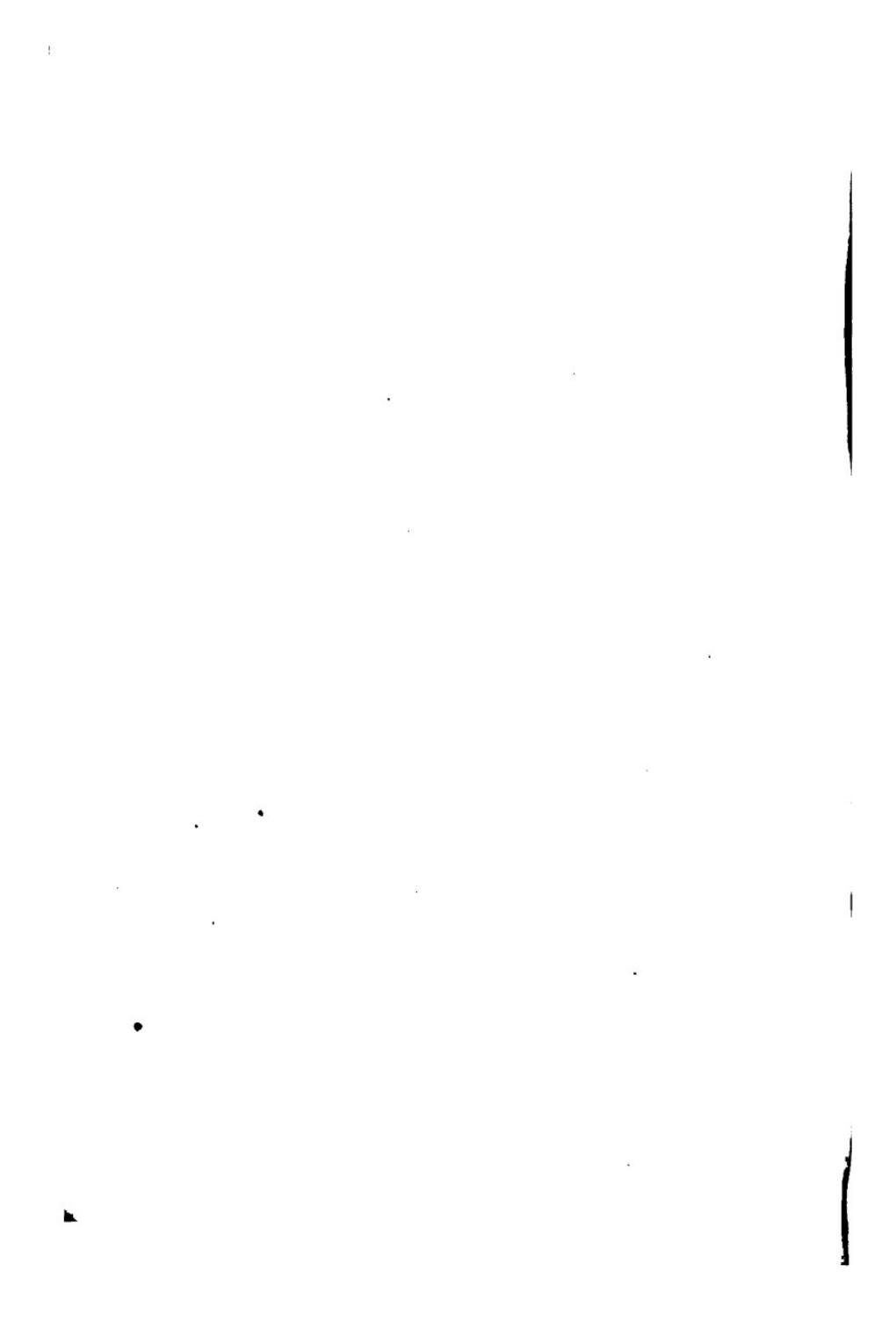
* It is sometimes a matter of convenience to mark the names on specimens of the fruit itself. This is quickly and permanently done by tracing the name with a blunt stick, or a pencil, pressing hard enough to indent the surface, but not to tear the skin. This succeeds best on pears, the writing soon changing color and becoming conspicuous.



PART II.

ON THE

DIFFERENT KINDS OF FRUITS.



CHAPTER I.

THE APPLE.

THIS fruit, though less delicious than the peach, pear and apricot, possesses, from its hardiness, productiveness, long continuance, and various uses, an importance not equalled by any other fruit in temperate climates.

VARIETIES. These, by continued propagation from seed, have become very numerous. The London Horticultural Society collected fourteen hundred, three quarters of which proved to be either fruits under different names, or else unworthy of cultivation. Probably not less than two thousand have been advertised in the nursery catalogues of the United States within the last thirty years; in these, great confusion exists, both by the frequent application of the same name to different and distinct fruits; and again, the same fruit is often found under several different names. Some fine and well known varieties however, do not present this difficulty; their wide dissemination or clearly marked characters, prevent the confusion so often prevalent. On this subject, Lindley remarks with much truth—"In apples, a greater confusion exists in this

respect, than in any other description of fruit. This arises not so much from the great number of varieties grown, as from the number of growers, some of whom seek to profit by their crops alone, regarding but little their nomenclature. Nurserymen, who are more anxious to grow a large stock for sale, than to be careful as to its character, are led into error by taking it for granted that the name of the fruit they propagate is the correct one, and no other; hence arises the frequency of so many fruits being sold under wrong names. Gardeners, who purchase trees, become deceived by this procedure, and do not discover the error, unless they have been imposed upon by something *worthless*, and obviously at variance with the character of the fruit sold them. This is a serious evil, to say nothing of the disappointment to the purchaser; for unless the mistake be detected at first, the longer the tree grows before it is discovered, the more time will have been lost by its cultivation; and, be it remembered, this time is irrecoverable."

SELECT LIST. It would be a difficult task, even for one well acquainted with all the good varieties, to give a complete selected list of the finest; variations in taste, changes wrought by climate, and other controlling causes, would still increase the difficulty. With some, high and delicious flavor for the table, is the chief object, and with others, fine appearance and productiveness for market; early

maturity, long keeping, thrifty growth, bearing when young, and various other qualities, materially affect their value.

SUMMER FRUIT.

Yellow Harvest. Tree small, a great bearer, fruit medial size, yellow, acid; perhaps the best very early apple.

Early Red Margaret. Fruit rather small, striped with red, round ovate, pleasant sub-acid, fine; ripens as early as the Yellow Harvest, but hardly so high in flavor.

Early Sweet Bough. Tree rather small, of compact growth, fruit large, roundish and very slightly conical, sweet, and of excellent flavor.

Early Strawberry. Growth upright, size medium, oblong-conical, streaked with high brilliant red, flavor sub-acid and fine. An abundant bearer every alternate year.

Sine Qua Non. Tree small and of slow growth, fruit medial size, smooth and fair, slightly conical, green becoming yellow, texture delicate, flavor sub-acid and excellent. A great bearer.

Early Joe. A new variety—medial size or rather small, rather flat, fine red, sub-acid; a great bearer, and one of the finest and most delicate of all apples.

William's Favorite. Medial size or rather large, oblong, fine red, one of the best early apples, and a great bearer.

Red Astrachan. Large, handsome and showy, rather acid, but hardly first rate in quality.

Benoni. Medial size, round, deep red, of a fine rich sub-acid flavor, and a great bearer.

EARLY AND MID-AUTUMN FRUIT.

Several of the preceding varieties extend their time of ripening into autumn. In addition, the following are among some of the best to succeed them :

Golden Sweet. Rather large, roundish, scarcely flattened, fair, light yellow when ripe, very sweet, and fine flavor. A good bearer.

Summer Queen. Fruit rather large, round, and somewhat conical, striped with rich red, flavor acid, rich, spicy ; one of the best summer cooking apples known, but liable to become scrubby on hard clayey soils. A good bearer.

Late Strawberry. Tree of very rapid growth when small, but never attaining the largest size, a great bearer, fruit medial size, nearly globular, slightly oblong-conical, striped with light and dark red, flesh very tender, juicy, and of an exceedingly pleasant and agreeable flavor.

Autumnal Swaar. Fruit rather large, flat, yellow, very sweet, spicy, and high-flavored. A good bearer.

Gravenstein. Tree of vigorous growth, a good bearer, fruit medial size, inclining to flat, striped with bright red, flavor acid, exceedingly rich and

high-flavored. A fruit of the highest value, recently introduced from Germany.

Porter. Rather large, oblong-conical, clear light yellow, of fine flavor, and very productive.

The *Dowse* or *Hawley*, a very large and fine variety; the *Duchess of Oldenburgh*, a fine new foreign sort; and the *Dyer*, a large, pale yellow, an excellent New-England apple; are all worthy of cultivation.

LATE AUTUMN AND EARLY WINTER.

Rambo. Fruit medial size, striped and dotted with dull light red, flavor slightly sub-acid, spicy, rich, and excellent. A good bearer.

Ribston Pippin. Medial size, or rather large, greenish yellow, with a reddish brown shade next the sun, acid, very rich and fine.

Fameuse. Medial size, slightly flattened, fine deep red, flesh very white, tender, and excellent.

Fall Pippin. Very large, has weighed 23 ounces, flattish-conical, rich yellow when ripe, sub-acid, spicy, and excellent. Fine for the table, unequalled for stewing, but often inclining to become scrubby. Often a good, sometimes a moderate bearer.

Bell-flower. Fruit often large, variable, long ovate-conical, irregular, light yellow when ripe, very delicate, acid, and of very fine flavor. A good bearer.

Rhode Island Greening. The fruit of this well

known variety, is large, flat, green, acid, rich and high-flavored ; tree of the largest size, a great bearer, and fruit always fair. A resident of Ontario county, picked in 1843, from one tree, 40 bushels. Its great and uniform productiveness, and free growth, though the fruit is scarcely equal to some others in flavor, render it the most extensively cultivated market apple of Western New-York.

Esopus Spitzburgh. Fruit rather large, bright red, round-oblong, acid, spicy, and unsurpassed in richness of flavor. The tree a moderate grower, but attains a large size, and bears well.*

Swaar. Fruit often large, flattish, green, becoming rich yellow, slightly sub-acid, of an exceedingly rich and agreeable flavor. Considered by many excellent judges as the best of all winter apples. A good bearer; fruit sometimes liable to become scrubby.

Baldurin. Large, nearly round, striped with red, flesh fine, juicy, with a most agreeable sub-acid flavor. This apple stands as one of the first among the first, both in quality and great productiveness, and is by way of pre-eminence, the apple of New England.

Jonathan. Introduced by Buel. Partaking of the character of the Spitzburgh, size medial, nearly round, a handsome bright red, acid, and fine flavored. An abundant bearer.

* Said to be better in New-York than in New-England.

Peck's Pleasant. Fruit rather large, uniformly smooth and fair, nearly round, greenish yellow, sub-acid, and of very fine flavor, partaking slightly of the character of the Newtown Pippin. A good bearer.

Ladies' Sweeting. Large, roundish-ovate, dull red, very tender, sweet, fine flavor, and a great bearer.

Tallman Sweeting. Medium or large, slightly flattened, yellow, flesh very sweet and rich, texture firm; an admirable winter baking apple.

LONG KEEPERs.

Black Gilliflower. Rather large, very oblong and conical, dark dull purple, slightly acid, rather dry, but otherwise a rich and high-flavored fruit, an abundant bearer, and an excellent keeper; and hence may be profitable for the spring feeding of animals.

Newtown Pippin. Tree of rather slow growth, fruit medial size, sometimes large, nearly round, green with a brown shade, becoming yellowish, sub-acid, of fine flavor, which it remarkably retains for a long time. Fine fruit of this variety commands a very high price in the New-York and English markets. It is liable to become scrubby, and selection for sale is of great consequence; a distinguished cultivator sent three hundred barrels to London, and received for them only seventeen shillings and sixpence, after paying freight; and again by a most choice selection, he sold them for

twenty-one dollars per barrel. In northern and western New-York, the summers appear to be too short for its full perfection.

Northern Spy. A new variety—large on thrifty trees, nearly round, bright red, slightly sub-acid, of a pleasant and agreeable flavor, which it retains with a remarkable degree of freshness till late in spring, and is an excellent keeper.

Roxbury Russet. Medial size or large, flattish, greenish russet, acid, with a good flavor; always fair, a great bearer, and excellent keeper.

English Russet. Smaller, less acid, and less flat than the preceding, and tree of more upright growth; nearly unequalled as a long keeper, lasting the year around.

RAISING THE YOUNG TREES.

These should be always from seedlings, budded or grafted with the desired kinds. The seeds are most easily obtained from the pomace of cider mills. This is to be broken up fine, in a large wash tub, mixed with water, stirred, and allowed to stand a few seconds, when the seeds will settle to the bottom, and the apple pulp is then racked off. A man will thus wash out half a bushel of seeds in a day. The clean seed are more evenly and conveniently sown than in the pomace, which may be done either in autumn or spring. If not

done till spring, they should be mixed till then with sand, and exposed to the weather. If pomace is sown, it should be mixed with a portion of ashes, to neutralize the sourness.

The seeds may be sown in drills from one to two feet apart, and the young plants thinned to three inches apart. A part of them will be large enough to take up for root grafting after the first year's growth. Those less than a quarter of an inch in diameter, may be left another year, and budded the following summer, or grafted the succeeding spring.

Root grafting is done by the whip method, already described. The young trees are taken up, the tops cut off, the grafts set on, the wounds covered with wax plasters, and then set out in rows in the nursery, to remain until finally removed to the orchard. The grafting is usually performed in the latter part of winter or early in spring, within doors, the grafted trees being packed in boxes, in clean moist sand. The tongue and cleft of the graft and stock, should so firmly interlock, as not to be easily displaced in handling. Wax plasters are often omitted, and adhesion made to take place by growth in a warm place while yet in the boxes; but the plasters render the operation more sure in all other cases, especially if dry weather succeeds. The root of a young tree may usually be cut into two or three pieces, each of which will support a graft. Unlike larger trees, they suffer no detri-

ment if the projecting fibrous roots are mostly trimmed off, new ones always shooting out from the main root.



Fig. 21.

The grafts are most expeditiously set out with a dibble, or a sharp tool, shod with iron or steel, about an inch and a half in diameter, one stroke of which into the mellow soil forms a hole for the roots, and two or three lighter strokes press the earth closely about them. Fig. 21, represents a convenient form for this instrument, which may be made of the handle of a broken spade. Fig. 22, shows the graft and root, ready for setting out. To keep the whole moist, till sufficient growth takes place, the place of union between the root and graft should be at least three inches below the surface.



The chief care afterwards is to keep the ground constantly cultivated and perfectly clean, which will increase the growth during summer, and exclude mice in winter; the trees are to be trained up to one leading stem, not trimming so closely as to make them slender; they are to be kept straight, by tying them when necessary to upright stakes; and all destructive insects must be watched and destroyed.

If the ground is rich and kept perfectly clean, they will grow from one and a half to two feet the

first summer after grafting; to three or four feet, the second summer; five to six or seven feet the third summer, when many of them will be large enough for removal to the orchard, and most of the remainder in one year more. If suffered to remain longer in the nursery, they should be taken up and set out again, for the purpose of shortening the long roots, without which subsequent transplanting would be attended with too great a check in the growth, if not actual danger to the tree.

When young trees are *budded*, it should be done within two or three inches of the ground, as handsome trees are produced in this way only; and they need in other respects precisely the same treatment as grafted trees.

SOIL FOR ORCHARDS.

The apple is a vigorous and hardy tree, and will grow upon most soils. It does best however, on such as are deep, rich and good, such as will give good crops of Indian corn. Hard, shallow, and wet grounds, are to be avoided. Improvement by manuring and deep cultivation is desirable, as a material difference in quality and productiveness often results from a difference in fertility.

DISTANCE.

Where the quantity of ground is limited, trees may for a time stand within fifteen or twenty feet;

but for large and permanent orchards they should not be nearer than thirty feet. There is however, a material difference in the size of varieties, hence a variation may be allowed. But this variation in distance should not break the rows which are to be preserved for convenience in cultivation. The rows may be kept entire, by varying the distance in one way only, as in the annexed figure. The middle portion is for trees of the largest size, as the Spitzendburgh, Fall Pippin, and Rhode Island Greening; those of smallest size, as Bough, Yellow Harvest and Sine Qua Non, are on the left; and those of middle growth, as the Swaar, Black Gilliflower, and Tallman Sweeting are on the right.



TRANSPLANTING.

Full directions have been given in a preceding chapter, where the superior advantages of broad, deep, and loose beds of earth, made by digging large holes, have been strongly urged. This care is often thought unnecessary with so hardy a tree as the apple. But a just comparison of the two modes would exhibit its eminent advantages. A hundred holes, six feet in diameter, may be dug by

a man in eight days,—and filled with muck or rich mould in four days more; the cost with team, eleven dollars. A hundred small holes may be dug in four days; cost, three dollars; difference against large holes, eight dollars. The trees planted in the large holes would probably yield with good attention, a bushel a tree, in five years, making 100 bushels; the sixth year 120 bushels; the seventh, 150; the eighth, 190; the ninth, 240; the tenth 300; total 1000 bushels,—worth, at 20 cents, \$200. The other would not probably produce 100 bushels in less than ten years, which would be worth \$20. Difference in favor of large holes, \$180, to balance \$8, against them. Although the calculation cannot be precise, it is probably a tolerable approximation, and must appear moderate when the increased size of the trees and superiority of the crop for many years afterwards is taken into account.

The objection that such work must be done at a very busy season of the year, may be obviated by digging the holes and filling them at some other time.

CULTIVATION.

The importance of thorough cultivation, has been already noticed, and cannot be too well understood. If two specimens could be exhibited side by side, the one showing the stunted, lingering,

mice-eaten and moss-covered trees, caused by neglect, and the growth of weeds and grass ;—and the other, the vigorous and thrifty growth, and the fair and abundant crops, resulting from fine and clean culture ; none could fail to be satisfied of the superiority of the one and impolicy of the other.

GATHERING AND PRESERVING.

It is of great consequence in gathering all kinds of fine fruit, to avoid bruising ; the high quality of some sorts is nearly destroyed by carelessness in gathering, and they are rendered unfit for home use or for market. Hence careful hand-picking becomes indispensable.

Preserving in barrels is usually most convenient. They should be filled sufficiently to cause a slight pressure when the barrel head is put in, to prevent rattling ; and the barrels should rest on their sides and not on the ends. Winter fruit has been preserved with great success and with much freshness, by alternating the layers of apples in the barrel with layers of dry chaff mixed with a small portion of dry pulverized lime. Apples may be well kept till spring, if buried late in autumn ; but to prevent swelling, cracking, and a loss of flavor, they should be placed in a box or on a bed of straw, and entirely excluded from contact with the damp earth. Where cool cellars are at hand, they are kept best for winter use on large shelves.

THE USES of the apple are various. In addition to culinary purposes and for the table, they have been found excellent for fattening hogs, and feeding cows, horses, and other domestic animals. For cattle and horses, sweet ones are best. Molasses is obtained by evaporating the fresh juice of sweet apples in clean vessels; and also by steaming sweet or sour apples in a large vessel, a pan being placed at the bottom to collect the molasses as it descends. The manufacture of sugar from this fruit is worthy of attention and experiment.

DESTRUCTIVE INSECTS.

These are not usually formidable, but occasionally become so. Among the chief are, 1. Caterpillar; 2. Borer; 3. Canker worm; 4. Apple worm; 5. American Blight.

1. *Caterpillar*. This has been the most serious enemy to the apple in most parts of the country. It has its seasons of increase and decrease. Some years it has nearly stripped whole orchards; and again it has diminished in numbers in successive years, till few could be found. It appears at the present time to be rapidly on the increase.

There are many species which feed on the apple leaf; but the only one of importance, is that known as the *common orchard caterpillar*, which is hatched in spring as soon as the leaf buds begin to open. At this time, it is not the tenth of an inch long,

nor so large as a cambric needle, but it continues to increase constantly in size for several weeks, until two inches long and a quarter of an inch in diameter. It then spins a cocoon and passes to the pupa state. In the latter part of summer, it comes out a yellowish brown miller, lays its eggs and dies. The eggs are deposited in cylinders or rings, containing three to five hundred each, encircling the smaller branches, and usually within a few inches of the extremity. The accompanying figure (fig. 23,) represents one of these masses of eggs of the natural size.

Fig. 23. They remain through winter, protected from the weather by a vesicular water-proof varnish, and hatch in spring, as just stated. Each collection of eggs, makes a nest of caterpillars.

One nest is enough to defoliate a large branch, and when several are on a tree, the size and quality of the fruit is seriously lessened.

The best mode, incomparably, for their destruction, is to cut off the small branches which hold the eggs during autumn or winter, and commit them to the fire. The most convenient implement is a long pole, armed with a pair of clipping-shears,



worked by a cord ; or a sharp, hooked knife, on the end of a pole, will answer nearly as well. The eggs are seen at a glance, after a little practice ; a cloudy day should be selected to prevent pain to the eyes. Every nest of eggs thus removed, which is done in a few seconds, totally prevents a nest of caterpillars in the spring, and is far more expeditious and effectual than the usual modes of brushing off the caterpillars with poles, brushes, or washing them with soap-suds, ley, or white-wash.

2. *Borer*. This insect enters the tree and cuts into the solid wood near the surface of the earth. It is a dangerous enemy, but not as yet very extensively spread. Its presence is perceived by the dust it ejects from its hole. If the trees are watched, and it is taken early, it is easily cut out with the point of a knife. If deeper in the wood, it may be extracted by a flexible barbed wire, or punched to death in its hole by a flexible twig.

3. *Canker worm*. This caterpillar appears to have been as yet chiefly confined in its destructive ravages, to portions of New-England. The accompanying figures represent the perfect insect the male with wings, the female nearly destitute. (Fig. 24.) The canker worm at-



Fig. 24.

tacks both fruit and leaves; when numerous, the small webs they make, added to the destruction of the foliage, give the tree the appearance of having been scorched. The remedies consist in various contrivances to prevent the insects ascending the tree, but none have been yet discovered of easy, safe, and effectual application.

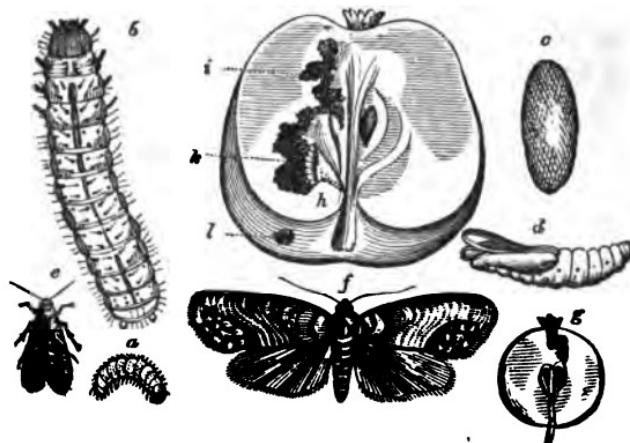


Fig. 25.

4. The *Apple-worm* attacks the fruit, by entering at the blossom, and feeding at the core. In some years, it has been so common, as seriously to injure the quality of the crop. The annexed figures, (fig. 25,) show it in different stages of growth.* The best preventive is to allow swine to pick up

* The curculio or plum weevil is sometimes found in the apple, but never the apple worm in the plum.

the wormy fruit as it falls, thus destroying the enclosed insect, and preventing its spread.

5. *American Blight*. This is a species of *aphis* or plant-louse, covered with long, white, cottony hair. In England, it has proved very destructive ; and on young trees in this country it has done some injury. It is destroyed by whale-oil soap, and by lime wash. Other species of *aphis* often infest the young leaves ; they are easily killed by a solution of whale-oil soap, which may be applied by a syringe or by immersing the branches.

CHAPTER II.

THE PEAR.

THE pear is distinguished by great delicacy of texture in the finer varieties, and by mild and delicious flavor. In these points, it much excels the apple, but falls far short in keeping properties and in general and extensive uses.

VARIETIES. The following, which are among the best, have either originated in this country, or have been thoroughly proved and found adapted to the climate.

SUMMER FRUIT.

Amire Joannet. Fruit very small, good, but not first rate, a great bearer, chiefly valuable for its early maturity, often ripening two weeks before wheat harvest. The *Little Musk* or *Primitive*, is smaller, and a week later.

Madeleine. Fruit medial size, green, of a delicious melting flesh and fine flavor. Probably the best very early pear, ripening with early wheat-cutting. A sub-variety, hardly so good, has less of the peculiar green of the skin and none of the slight shade of acid, which mark the true variety.

Skinless. Medial size, sometimes small, sweet, juicy, good, a great and constant bearer, and its qualities unchanged by the variations of seasons.

Dearborn's Seedling. Medial size, of a delicate texture and flavor, melting and very fine. A most desirable early variety.

Julienne. The fruit much resembles the last, but much inferior in flavor; remarkable for bearing while very young, often before removed from the nursery.

Bloodgood. Medial size, or rather large, yellow with russet spots, flesh tender and melting, flavor rich and fine. The three last ripen nearly at the same time, or latter part of 8 mo. (Aug.) and all come into bearing while young.

AUTUMN FRUIT.

Washington. Medial size, often small, variable, of a very sweet, spicy, and delicious flavor, which it retains unchanged by seasons. Ripens the beginning of autumn.

Bartlett, or William's Bonchretien. Very large, good, flesh very melting. Though not equal in richness of flavor to some others, its free growth, large size, beauty and great productiveness, render it well worthy of extensive cultivation. It will probably prove one of the most valuable for early market. A tree only an inch and a half in dia-

ter, on the grounds of the writer, bore about one peck of fine fruit.

Onondaga or *Swan's Orange*. Tree of vigorous growth, fruit large, becoming a fine yellow, flesh buttery, very juicy, with a rich, excellent, aromatic flavor.

Seckel. Tree of slow growth, fruit small, flavor spicy, slightly musky, and of unequalled richness. Ripens at mid autumn.

Urbaniste. Large, melting, sub-acid, excellent, ripening middle and latter part of autumn.

Virgalieu or *White Doyenne*. Does not succeed on some parts of the sea coast, but known in most other places as a fruit of nearly unequalled excellence; a free grower, and good bearer. The *Gray Doyenne*, is fully equal in delicious quality.

Van Mons' Leon le Clerc, *Louise Bonne of Jersey*, *Rostiezer*, *St. Ghislain*, *Heathcot*, *Dix*, and *Beurre Bosc*, deserve to be classed among the finest autumn pears. All will be found to vary more or less with climate and cultivation.

WINTER FRUIT.

Little attention has been given as yet, in many parts of the country, to the cultivation and management of winter pears; and their fitness for general culture is not yet established. Some of the late autumn varieties, as the *Virgalieu*, may be kept

through the early part of winter in a cold place, and ripened by removal to a warm room. The *Beurré Diel*, a larger, coarser, and later fruit than the *Virgalieu*, may be thus kept till mid-winter. The *Winter Nelis* and *Beurré d' Aremberg*, are regarded as among our best winter pears. The *Columbia*, *Passe Colmar*, and *Easter Buerré*, also possess fine qualities, the latter being more difficult to ripen successfully. The best mode of management is to keep them in a cold room till near the usual period of maturity, and then expose them for a few days to a temperature as high as 70 degrees Fah. In this way they soon attain fine order for eating. Late autumn and winter pears of the finest quality, have been rejected as worthless from the simple fact that they were allowed to ripen in the cold.

The pear is more easily influenced in quality by circumstances than any other fruit; hence the same variety is sometimes superb and at others tasteless and worthless; difference of climate, locality, soil, culture, seasons, management in ripening, and other causes, have a great bearing on the result. Hence the care and experience necessary for selection and decision. And hence, also, the importance of selecting, so far as practicable, those varieties least influenced by external causes.

RAISING THE YOUNG TREES.

The best pear trees are raised by grafting and

budding on seedling stocks. Stocks from suckers sometimes do well; but unless they are well provided with fibrous roots on all sides when set out, the growth is apt to be diminutive, and the trees crooked or one-sided. The planting and management of the young trees may be the same as with young apples; but as the stocks are more valuable than apple stocks, they are not usually taken up for root grafting, but grafted or budded near the surface of the ground where they stand, which may be repeated in case of any failures. Seedlings are, however, greatly improved by transplanting at one or two years of age; cutting off the lower end of the tap root, induces them to throw out lateral roots, and renders their final removal from the nursery more easy and safe.

As a general rule, pears should be grafted or budded on pear stocks. On the apple, hawthorn and quince, their fruitfulness is increased, but the duration of the life of the tree is diminished. The same cause which produces an accumulation of the elaborated juices in the branches, and consequently an increase of flower buds and a heavy crop of fruit, also prevents the proper flow and free diffusion of the sap and secretions, and shortens life. There are, however, several advantages in the employment of such stocks in certain cases.

One of the most important of these is the production of dwarfs. These are chiefly desirable in

small gardens and on very limited grounds. The quince is much the best stock for this purpose. In some very highly manured soils, and with some unproductive varieties, the quince has been found absolutely necessary to produce a crop. This stock also improves the quality of some of the melting pears, of which the Duchesse d'Angouleme is given as a striking instance.

SETTING OUT. Pear trees, on account of their upright, pyramidal growth, require much less space than apples. Twenty feet distance is sufficient in all cases.

The same remarks with regard to soils, made in relation to the apple, will apply with little variation to the pear. Fast growing varieties, as the Madeleine, if on low and very rich ground, are apt to be injured by winter.

Trees of the pear have been known for centuries to maintain their productiveness, thriftiness and vigor.

DISEASES AND ENEMIES.

The only formidable disease to which the pear tree is subject, is the *Fire-blight*. This usually makes its appearance during the early part of summer. The branches affected by it, suddenly turn black and die. If not arrested in its progress, it usually extends down the tree and destroys it.

There is but one remedy. This is the immediate excision of the affected parts, or within a day

118 DISEASES AND ENEMIES OF PEAR TREES.

or two after the disaster appears. As the malady extends downwards, the limb should be cut off two or three feet below all appearance of the blight. When promptly and thoroughly applied, this remedy has proved completely effectual. But a fearless application of the remedy will only insure success. All delays and half-way attempts will end in failure.

The cause of this disease is a matter of dispute. Professor Peck and others believe it to originate from an insect (*Scolytus pyri*), which eats round the branch under the bark. Hence all affected limbs, when removed, should be committed to the fire, to prevent further ravages. But it is mostly ascribed to the influence of cold on late-growing unripened wood.* Both these causes may produce it, as the insect has evidently been discovered; and again numerous cases have occurred where the closest examinations have failed in its discovery.† But the same remedy, the removal of the branches, is equally applicable to both, and equally successful; in one it prevents the further ravages of the insects; in the other, it prevents the extension of the disease by the downward flow of the poisoned and fermented juices from the affected limbs.

* Which must not be confounded with winter-killing, causing death at once, the influence of the cold being only sufficient to produce disease in the case mentioned, eventually resulting in death.

† For a full explanation of this theory, and for several striking cases in illustration, see *Cultivator* for 1845, p. 51.

CHAPTER III.

THE QUINCE.

THE quince is usually propagated by layers and by cuttings. When by cuttings, they are to be taken from the trees in the spring, and buried in an upright position, in a light deep soil, and in a moist shaded place, not less than ten inches or a foot deep, and leaving but a small portion above ground. If the shaded place cannot be had, spread over the surface of the ground, after they are planted, a coat of moss, or partially decayed leaves. If the weather becomes very dry, water them.

To propagate by layers, the young shoots are to be laid down in the spring, and buried so as to leave only two or three buds at the extremity above ground. When these buds have well started, the best only should be left for growing. A part of them will throw out roots by autumn, and may be removed from the parent tree and set out in rows; the rest should remain a second year till rooted. If the ground is rich, and they are kept well cultivated and well straightened by stakes, the cuttings and layers will produce trees fit for removal as standards in two or three years.

The soil for the quince, should be deep, rich, and more inclining to be moist than dry. The alluvial banks of rivers are said to be well suited to its growth. The distance asunder need not be more than ten feet.

A very necessary operation is pruning. The trees tend to throw up many suckers, which greatly lessen their fruitfulness, and render the fruit small, knotty, and worthless. A neighbor had several trees, with an abundance of suckers, as represented in the annexed figure, (fig. 26,) and which yielded nothing. By the use of the axe and saw, he pruned them as represented in fig. 27, since which they have yielded fine crops.



Fig. 27.

Fig. 26.

The principal *varieties* are the Orange, the Pear, and the Portugal quince.

The Orange, sometimes called from its shape, the Apple quince, has large roundish fruit, with a short thick neck, and is of a beautiful rich yellow color. It ripens about the middle of autumn. It is the only variety extensively cultivated in this coun-

try, for which it appears to be best adapted. There appear to be several sub-varieties, differing slightly in shape and considerably in size, but little in quality. The largest sometimes weigh a pound.

The Pear or oblong quince, has slenderer leaves, and smoother, more delicate and more elongated fruit, of a regular pear shape. It is quite distinct from the preceding, resembles it in quality, but is of more delicate texture.

The Portugal quince, though largely cultivated in England, appears to be little known in this country. According to Loudon, it has broad coriaceous leaves, and an oblong fruit, which is more juicy and less harsh than the others, and therefore the most desirable. It is rather a "*shy bearer*," which must form a decided objection, as cultivators already find sufficient difficulty even with the most prolific varieties.

The Japan and Chinese quinces are cultivated merely as ornamental shrubs.

A very formidable, and nearly the sole enemy to the quince, is the BORER. This is the larva of an insect which attacks the wood of the trunk near the surface of the ground, and works inwards, usually upwards, but sometimes downwards, to a distance of several inches into the wood, during the summer season.

As the borer frequently destroys the tree, vari-

ous means of prevention have been resorted to. The application of charcoal, blacksmith's cinders, tar, and unleached ashes, have been tried with various degrees of success. It has been proposed to inject upon them a strong solution of soap, or a decoction of tobacco ; but their efficacy may be questioned, as some larva continue to live even when immersed in sulphuric acid or a solution of corrosive sublimate. The application of oil, by choking their air-vessels, might do well.

The best method appears to be direct attack. Scrape the soil from the trunk, and cut with a knife lengthwise, and not across the bark and wood, till the insects are found. Repeat the operation once a week for several times, as a part escape the first examination. Then cover the wounded parts with a mixture of warm tar with ochre or brick-dust. It is a great saving of labor to arrest early their progress ; hence trees should be examined frequently. They may sometimes be extracted by a flexible barbed wire, when cutting out would too much mutilate the tree.

Grafting the quince on pear stocks would probably prevent the evil, as the pear is not attacked by the borer.

CHAPTER IV.

THE PEACH AND NECTARINE.

THE only difference between the peach and nectarine being the downy skin of the former, and the smooth glossy surface of the latter, the same general rules of culture will apply to both.

RAISING THE YOUNG TREES.

Peach trees are raised by budding seedling stocks with the desired varieties. The stones should be mixed with moist sand or earth within a few weeks after maturity; they may afterwards be planted either in autumn or spring. The depth should not exceed two or three inches. A few vegetate the first season; the remainder, more than nine-tenths, the second season. Cracking the stones insures their growth the first year. The distance should be the same as for young apple trees, already noticed.

If the soil is good, and is kept clean and mellow, a part of them will be fit for budding by the latter part of the first summer. Where it is deferred till the second year, all the stocks should be cut down near the ground, one good bud being allowed to

grow, and the rest rubbed off as fast as they appear. All the strength of the roots being thus sent up into one shoot, its growth is correspondingly thrifty; and the operation of budding, the success of which always depends more on a thrifty stock than on any thing else, is rendered the more certain.

Transplanting, by shortening and multiplying roots, if well done, always improves the peach tree at this age. The removal from the original seed bed to nursery rows, may be done after the first summer's growth. If the stocks have been budded, the removal is best done early in spring, the top being headed down at the time to within two or three inches of the inserted bud. If they have not been budded, they should be headed down to a good bud, to grow for the insertion of a new one, as already described.

When the new bud has grown a few inches, it should be tied to the portion of the stock left above it, which keeps it straight, and prevents danger of its being broken off by accident or by wind. The ligature which thus secures it should be removed by the middle of summer, and the remaining stub cut off neatly, down to the new shoot.

Peach buds being very liable to become winter-killed in the more northern states, the oldest and largest on vigorous shoots should be selected for insertion into the stock. On old trees, the triple buds

near the base of the young twigs, the middle one being a leaf bud, are more likely to endure winter, than the smaller and more lately formed near the upper extremities. The best knowledge on this subject may be gained, by a careful observation, in the early part of summer, of such as have withstood the cold of the preceding winter,—the same buds dying, whether on the parent tree, or inserted into the stocks. A high and dry soil is much better than one low, rich or mucky; and warm valleys are liable to more severe night frosts and consequent disaster, than exposed hills.

The same care as with the apple, is needed in staking up and in trimming the growing trees. Setting the trees in grass land, unless they are constantly kept widely and deeply spaded round, is little better than throwing them away.

SOIL.

The best soil for the peach is a sandy loam. A light soil is usually preferred; but is not indispensable. I have known this tree to succeed admirably on heavy soils, when large holes were dug, (six or eight feet in diameter,) and filled with loose and good earth. Young peach trees, unlike the apple, do not need the previous application of much manure. A soil too fertile, tends to promote the late growth of succulent wood, unfitted to withstand the

severity of winter. But thorough, clean, and constant cultivation, is indispensable for success.

TRANSPLANTING.

Peach trees, when transplanted, should not be large. A small thrifty tree, well set out, from the little check it receives in removal, often attains a large growth sooner than a large tree stunted by transplanting.

ARRANGEMENT OF VARIETIES.

It is commonly supposed that varieties of the peach may be continued without change, merely by planting the seed; hence many neglect their propagation by budding. The least improved varieties doubtless vary least; the common Indian peach, for instance, continues nearly the same through successive ages, though many sub-varieties exist. But the finest peaches, being farthest removed from the wild or natural state, are most liable to variation, and the original is rarely produced from seed. The nice shades of difference, however, which distinguish different varieties, are frequently overlooked, and the error thus becomes confirmed.

To obtain good varieties with any degree of certainty, budding must be resorted to. Grafting rarely succeeds, and never unless performed with unusual care on such kinds as have the firmest wood.

When the great difference between good and bad varieties is remembered, the importance of obtaining the *best*, must be obvious. The reputation of some which are truly excellent, has been greatly injured by numerous errors in names. Not only those of fine varieties are given by mistake to worthless fruit, but good varieties, increased by seed, receive the genuine name, which is still continued through successive plantings, though wide departures from the original are thus gradually produced.

This confusion and misapplication of names, and the consequent perplexity to the cultivator, have induced the attempt to arrange the varieties and distinctive characters. The peach presents facilities for this purpose, not existing in other fruits. The following arrangement, which is generally adopted as the best, is from Lindley. Peaches and nectarines, (which may be considered as one and the same fruit, the latter having smooth skins,) are separated into three general *classes*, each of which has three *divisions*; these are again separated into two *sub-divisions*, and every sub-division into two *sections*; consisting in all of thirty-six sections. Only a part of these sections contain varieties with which we are acquainted, and are only to be filled up as others are discovered.

Class I. comprehends those whose leaves are

deeply and doubly serrated (or cut like saw-teeth,) and having no glands on the serratures. Fig. 28.

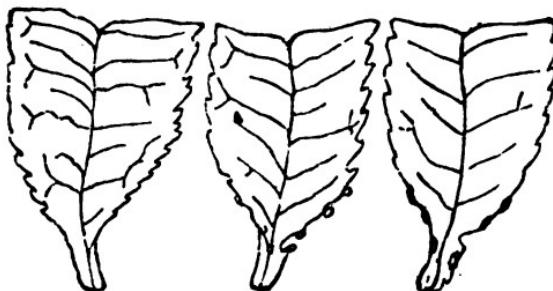


Fig. 28.

Fig. 29.

Fig. 30.

Class II, contains those whose leaves are crenate or serrulate (or with smaller and more rounded teeth,) and having globose glands. Fig. 29.

Class III, includes all those whose leaves are crenate or serrulate, having reniform (or kidney-shaped) glands. Fig. 30.

"The form of the glands," observes Lindley, "as well as their position, is perfectly distinct; they are fully developed in the month of May, and they continue to the last, permanent in their character, and are not affected by cultivation. The globose glands are situated, one, two, or more, on the foot-stalks, and one, two, or more on the *tips* or *points* of the serratures of the leaves. The reniform glands grow also on the footstalks of the leaves, but those on the leaves are placed *within*

the serratures, connecting, as it were, the upper and lower teeth of the serratures together; their leaves, when taken from a branch of a vigorous growth, have more glands than the leaves of the globose varieties. It will, however, sometimes happen that glands are not discernible on some of the leaves, especially on those produced on weak branches; in this case, other branches must be sought for which do produce them."

These classes, thus formed, are each divided into three divisions.

Div. I, embraces those which produce large flowers.

Div. II, includes those which produce flowers of medium size.

Div. III, contains those which produce small flowers.

These divisions are not so distinctly marked as the classes; the middle and small flowers only differing by the former being larger in all their parts.

The sub-divisions, two in number, are determined by the fruit. The first comprehends true *peaches*, or those which have a downy skin; the second includes *nectarines*, or those which have a smooth skin, similar to that of the plum.

Each of these sub-divisions are again divided into two sections; the former including the *pavies* or *clingstones*; the latter the *melters* or *free-stones*.

The following *syst'ical* table will exhibit these

divisions and subdivisions as applied to the first class:

CLASS I. Leaves deeply and doubly serrated, with- out glands.	Div. 1. Large flowers.	Peaches. Nectarines. Peaches. Nectarines. Peaches. Nectarines. Peaches. Nectarines.	Sub. 1. Peaches.	Sec. 1. Pavies.
	Div. 2. Middle flowers.		Sub. 2. Nectarines.	Sec. 2. Melters.
	Div. 3. Small flowers.		Sub. 1. Peaches.	Sec. 1. Pavies.
			Sub. 2. Nectarines.	Sec. 2. Melters.
			Sub. 1. Peaches.	Sec. 1. Pavies.
			Sub. 2. Nectarines.	Sec. 2. Melters.
			Sub. 1. Peaches.	Sec. 1. Pavies.
			Sub. 2. Nectarines.	Sec. 2. Melters.
			Sub. 1. Peaches.	Sec. 1. Pavies.

The same arrangement may be adopted with the other classes.

The following list contains some of the best varieties known in this country, arranged according to the preceding method.

SERRATED GLANDLESS LEAVES. LARGE FLOWERS.

Peaches—Pavies.

Old Newington.

Early Newington, or Smith's Newington.

Peaches—Melters.

Early Anne.

Malta.

Noblesse.

Early White Nutmeg.

Nectarines—Pavies.

Scarlet Newington.

Tawny Newington.

SERRATED GLANDLESS LEAVES. SMALL FLOWER.

Peaches—Melters.

Royal George.

Early Tillotson.

Belle de Vitry.

CRENATED LEAVES, WITH GLOBOSE GLANDS.

LARGE FLOWER.

Peaches—Melters.

Grosse Mignonne.

CRENATED LEAVES, WITH GLOBOSE GLANDS.

SMALL FLOWER.

Peaches—Melters.

Bellegarde.

White Imperial.

Teton de Venus.

George the Fourth.

President.

CRENATED LEAVES, WITH RENIFORM GLANDS.

LARGE FLOWER.

Nectarines—Melters.

Fairchild's.

CRENATED LEAVES, WITH RENIFORM GLANDS.**SMALL FLOWER.***Peaches—Pavies.*

Incomparable.

Catharine.

Peaches—Melters.

Chancellor.

Late Purple.

Nectarines—Melters.

Common Elruge.

Violet Hative.

Aromatic.

LIST OF VARIETIES.

The peaches named in the following list, afford a succession from a period immediately after wheat harvest till late autumnal frosts.

Early White Nutmeg. Very small, about one inch in diameter, good, but not of high flavor. A very slow grower and poor bearer, the trees hard to raise, and very rarely yielding more than a pint or two each at a time. Cultivated only for its early maturity, and can scarcely be considered as anything but a curiosity, as its place is well supplied by the later apricots, and excellent peaches follow within two weeks.

Red or Brown Nutmeg. Somewhat larger than the preceding, a little later, and hardly equal to it in flavor. It is a yellow fleshed peach, and conse-

quently, the leaves are never subject to mildew,—and it is of easy propagation. Both these varieties, possessing but little down on the skin, are liable to the attacks of the curculio, which must be guarded against by the means described for the PLUM.

Early Anne or *Green Nutmeg*. This resembles the early white nutmeg in the growth and appearance of the tree, but is a much better bearer, the fruit is double the size, and superior in flavor. It ripens seven or eight days after.

Sweetwater. This originated from the Early Anne, which it greatly resembles, but is of higher flavor, twice the size, being a medial sized peach, and in ripening 3 or 4 days later.

Early Tillotson. Fruit medial size, very fine, an abundant bearer. It belongs to the class of "Early rareripes," and is one of the earliest truly valuable varieties, ripening nearly with the Sweetwater, and scarcely a week after the Early Anne. It has serrated glandless leaves, and is slightly liable to mildew when young, but is of comparatively free growth and easy propagation.

Red Rarripe. There are several varieties under this name, possessing generally, fine qualities and productiveness, and ripening immediately after the Tillotson. Some of them have mildewed branches when young, and are of slow growth.

Early York. Fruit medial size, dark red, flavor excellent, one of the best very early varieties. Tree moderately vigorous.

Early York of New-Jersey. Fruit large, excellent, a free grower, and abundant bearer. Later than the preceding.

White Imperial. Large, nearly white, flavor excellent and not influenced by change of seasons. Resembles Morris White, but much earlier.

Grosse Mignonne, *Royal George*, and *George the Fourth*, are large peaches, with nearly white flesh, and the skin deeply reddened in the sun, and stand among the very finest for excellent quality.

The *Yellow Alberge*, *Crawford's Early*, and *Jacques' Rarericipe*, are among the finest moderately early, yellow fleshed peaches, ripening about the first of autumn.

The *Malta*, *President*, and *Crawford's Late*, are among the best late freestones.

The *Early Newington*, the *Old Mixon Cling*, the *Large White Clingstone*, and the *Heath*, are regarded as among the best clingstones.

The peach varies materially in quality, by the influence of climate. Fine American varieties are pronounced worthless in England. In this country, some, often delicious, are of little value in unfavorable seasons. Some which succeed finely, as far south as Philadelphia, lose much by removal to Western New-York, from the slightly diminished

warmth of our summers. Hence a different selection of sorts is needed in different regions of country.

Overbearing greatly injures the quality; thus the Heath clingstone, under favorable circumstances, is a very large and excellent fruit; but if permitted to overbear, it is small and worthless.

DISEASES AND ENEMIES.

Peach and nectarine trees are liable to destruction from two causes, the *worm* and the *yellows*. The presence of the worm is readily detected by the gum mixed with excrementitious matter, resembling saw-dust, oozing from the trunk of the tree at the surface of the ground. The best, and probably the only effectual remedy, is to scrape away the earth, and then with a knife to follow the holes made by the worm to their termination. As this insect confines itself to the *bark*, its destruction is very easy. It rarely happens that trees are completely destroyed by it, except they be small; death can only take place when the tree is girdled. Timely care will prevent this; the evil in fact is only to be dreaded by negligent cultivators.

The disease termed the *Yellows*, is truly formidable. Its cause has never been satisfactorily ascertained. The first indication is an irregular and *premature* ripening of the fruit, accompanied with *purple discolorations* of the flesh. This usually occurs the first season on a part of the tree only.

The following season, numerous small wiry shoots often grow from the larger branches, the leaves become yellow, the whole tree assumes a sickly appearance, and eventually perishes. This disease is still more to be dreaded from its contagious nature. If not checked, it commonly spreads through the whole orchard. It appears to be communicated at the time of blossoming by means of the pollen. But the infection may be conveyed in other ways. The bud from a diseased tree inserted in a healthy stock, will cause its death, and even the use of a knife in pruning, which has been previously used on a diseased tree. Facts also greatly strengthen the suspicion that the roots of healthy trees have imbibed the contagion by mere contact with those of diseased ones. It is also probable that planting the seed of diseased trees will communicate the disease to the seedlings.

After it has once attacked a tree, there is no remedy; and to prevent it from spreading to others, the diseased tree should be immediately destroyed. No young trees should be planted on the same spot, as the diseased roots still remain in the soil. Coxe says, "The peach tree cannot be cultivated with success on the site of a former plantation, until some years of an intermediate course of cultivation have intervened." As it is probable that the kernel may become infected, caution would direct that stones from diseased trees be never used for planting.

The shortness of life in the peach tree, and the consequent difficulty of its culture in the vicinity of New-York and Philadelphia, and in other places, appears to be chiefly owing to this disease. In western New-York, it is comparatively unknown, and great care should be used by cultivators that it be not introduced by importations of trees.

The peach tree, though generally supposed to be very short lived, when not destroyed by unnatural causes, will continue to flourish and bear for many years. Trees, twenty years old and upwards, are frequently seen in western New-York; and in the town of Farmington, Ontario county, were lately the remains of an Indian orchard, containing peach trees a foot in diameter and probably fifty years old, in a bearing state.

The curled leaf, which frequently appears on peach trees early in summer, is occasioned by frost. These leaves soon drop, and the tree assumes a healthy appearance. It would not be worth noticing except that it sometimes occasions unnecessary alarm.

The growth of peach trees is often retarded by mildew upon the leaves. This is confined to glandless, cut-leaved varieties only; such as the Early White Nutmeg, the Early Anne, and some of the earliest varieties of the red rareripe. Yellow fleshed peaches never suffer from it. It is not often a formidable evil.

The Nectarine, from its smooth skin, is eminent-
ly liable to destruction from the attacks of the cur-
culio. For a description of this insect, and effectual
modes of preventing its depredations, see the chap-
ter on the PLUM.

The effect of warm weather in winter, in starting peach buds, and their great danger afterwards from severe frosts, have been noticed when treating of the "SITUATION" for fruit gardens. Crops are obviously safest in cold situations, where the buds are not started until the warm weather of spring. In one case, a bank of snow covering the lower limb of a peach tree, saved the fruit, while all on the rest of the tree perished.* In another, a row of peach trees close along the north side of a fence, where snow-drifts lay, were more fruitful than the other trees. Hence the practice of piling snow round them has been recommended, and in some cases practiced with success. "It cannot be considered *infallible* in any situation. It is only useful where a slight reduction of temperature is sufficient to prevent the *starting of the buds*. We

* Dr. Kirland in Elliott's Magazine, mentions the case of a peach tree, a large branch of which was split down on the ground, early in winter. The flower buds on the prostrate branch were uninjured, while the whole crop of peach buds elsewhere was destroyed. The branch was carefully raised, and was loaded with fruit; the rest of the tree was entirely barren.

can easily conceive such a time, when a part of the buds start, and a part do not. In one season, the lower buds on the tree, which received the reflected heat from the ground, nearly all started, and were killed, while those on the tops of the trees were not injured. It is evident that a very slight depression of temperature would have been sufficient to have prevented the lower buds from starting. But the warmth may be so great, either late in autumn or in mid-winter, that no check of the kind would be sufficient." (*D. Thomas.*)

It has often been observed that woods or thick trees, buildings, high board fences, or steep hills, on the east side of peach orchards, protect the crop. Hence the erroneous opinion, that it is the *east wind* which does the damage. It is the sunshine upon the frozen buds which destroys them; hence, a clouded sky after a clear frosty night, by preventing sudden thawing, sometimes saves a crop.

CHAPTER V.

THE APRICOT.

It is remarkable that a fruit of such excellence as the apricot, and ripening from one to two months before the best early peaches, should be so little known. In its natural character, it is more nearly allied to the plum than the peach, resembling the former in its leaf and in the stone of its fruit; but downy like the peach, and partaking largely of its flavor and excellence.

The apricot is budded on seedling apricots, and on peach and plum stocks. Plum stocks are preferred; but their superiority is not so great as is often ascribed to them. They have not always afforded protection from the peach worm; as that insect, not to be thwarted, has penetrated the bark of the apricot three feet from the ground.

The soil should be deep and dry. Young trees frequently perish in winter from a wet subsoil, even where the surface is dry. They are about equal in hardiness to the earlier varieties of the peach. They are, however, peculiarly liable to the attacks of the curculio, and the usual destruction of the young crop by this insect, has led to the erroneous

conclusion that the apricot is not adapted to our climate. For modes of destroying them see next chapter.

VARIETIES.

These appear to have been less examined than those of most other kinds of fruit. The earliest appear to be the

Masculine, or *Early Masculine*. Fruit small, nearly round, an inch and a quarter in diameter, slightly acid, chiefly valuable for its earliness, ripening in seventh month (July.)

Breda Apricot. Fruit medial size, round, flesh deep yellow, rich, juicy, and good. Like the Orange, which is inferior, it has a sweet kernel; but differs by the easy separation of the flesh from its stone.

Peach and Moorpark. Regarded by many as identical, and closely resembling each other. These varieties are considered as the finest. Fruit large, sometimes two inches in diameter on young trees; flesh light yellow, approaching to fawn color, melting, full of very sweet and highly perfumed juice. Ripen later than the two preceding, and nearly at the usual time of wheat harvest.

The *Musch*, the *Royal* and the *Turkey*, are regarded as excellent sorts. The *Black Apricot*, though inferior in flavor, is valuable for its perfect hardiness, withstanding the cold of winter on all soils.

CHAPTER VI.

THE PLUM.

RAISING THE YOUNG TREES.

To obtain seedling stocks, which are always the best, plum stones must be treated like those of the peach. But as they are smaller, more care is needed to prevent drying before they are put into the ground. A part of them only vegetate the first year.

The plum is propagated both by budding and grafting. If by the former, the stocks should be in the most thrifty condition, and the work performed at the period of the most rapid growth. If by the latter, it should be done early in spring, and firm and well ripened wood chosen for the grafts.

Plums are sometimes budded at the surface of the ground into peach stocks. If the soil is afterwards kept banked up round them; and when they are transplanted, if they are set some inches below the place of union, they are found to grow and succeed finely. Large and productive trees are known, thus propagated; and the peach thus proves a good substitute in the absence of plum stocks.

SELECTION OF VARIETIES.

White Primordian, Early Yellow, or Jaune Hattive, is one of the very earliest of plums, ripening generally in western New-York about the middle of the seventh month, (July.) It is a small yellow fruit, a good bearer, with a sweet and good flavor. It appears to be the best plum at the season.

Morocco. This is a small plum, very productive, skin a dark purple, flesh juicy and high flavored. It ripens early in the eighth month, (August.)

Wilmot's Early Orleans. A large fine fruit, ripening with the Morocco.

Green Gage. This is generally admitted to be the finest of all plums; the genuine fruit is of medium size, and round; the stalk half an inch long, a little bent and inserted in a small funnel-shaped cavity; the skin is yellowish green, when fully ripe nearly yellow, mottled with russety red near the stem; flesh melting, separating imperfectly from the stone, juicy, sugary, and of exquisite flavor. There are many varieties cultivated under the name of Green Gage, originated by planting the stones of the genuine variety, but greatly inferior in flavor. There are other varieties of a small green plum, scarcely worth cultivating, which are frequently found in the gardens of our farmers, also called the Green Gage, but they bear no resemblance to the genuine fruit.

Imperial Gage. Fruit large, and the tree very

productive. Manning says that this is "the most productive and profitable of all plums." Kenrick says, "A single tree of this variety at Charlestown, (Mass.,) owned by S. R. Johnson, has for several successive years yielded crops which were sold at from \$40 to \$50 per annum."

Orleans. Fruit nearly round, middle sized or rather large, skin reddish purple, flesh yellow, firm and good, separating freely from the stone. An excellent fruit, ripening about the time of the Green Gage.

Huling's Superb. Fruit very large, often two inches in length, equal in richness, but more acid than the Green Gage.

Washington. Fruit large, orange yellow, with a fine blush next the sun; flesh yellow, firm, sweet and excellent. Though the flavor of this is inferior to that of some other varieties, it is highly esteemed as a first rate plum. Ripens about a week later than the Orleans.

Imperatrice. A good plum, ripening in the tenth month, (Oct.) One of the best late plums.

Coe's Golden Drop. Fruit of large size, skin golden yellow, spotted with rich red next the sun, flesh yellow, sweet and delicious. Like the preceding, slightly necked next the stem, a clingstone, and a great bearer. The best late plum. The writer has measured them more than 2 1-4 inches long.

The Egg Plum, or Yellow Magnum Bonum, is a very large plum, of a sweet agreeable flavor, but as the texture is rather coarse, is chiefly used for cooking and preserving. The same remark applies to the Red Magnum Bonum. These two are admired as table fruit where finer varieties are unknown.

There are some other fine varieties, as the Jefferson, Columbia gage, and Bleecker's gage, well worthy of cultivation.

DISEASES AND ENEMIES.

The chief are the Curculio, and the Black Excrescences on the limbs.



Fig. 31.

The *Curculio*, represented in the annexed figure, (fig. 31,) is a small insect not more than a quarter of an inch long, of a dark brown color, the sheaths covering the wings slightly variegated with lighter colors, the body resembling in size and appearance a ripe hemp seed.



Fig. 32.

About the time the young fruit attains the size of a pea, the curculio begins its work of destruction. It makes a small crescent shaped incision in the young fruit, and lays its egg in

the opening. The presence of the egg may be easily detected by these incisions upon the surface; the annexed figure, (fig. 32,) represents one of

these, magnified twice in diameter. The egg soon hatches into a small white larva, which enters the body of the fruit and feeds upon it, causing usually, its premature fall to the ground.

The insect, soon after the fall of the fruit, makes its way into the earth, where it remains till the following spring, probably in the pupa or torpid state, and is then transformed into the perfect insect to lay its eggs and perpetuate its race. It has the power of using its wings in flying; but whether it crawls up the tree or ascends by flight, appears not to be certainly ascertained.

Several expedients have been proposed for its destruction, or expulsion. These expedients may be divided into two classes; the first including those for repelling or killing the perfect insect when it takes possession of the tree to lay its eggs; and the second, those for the destruction of the larva before it makes its escape to the earth, and which consequently affords protection to the succeeding crop only.

1. Among the first may be mentioned various modes for frightening it from the tree. The frequent passing near trees planted by door-paths, usually accomplishes this end, and hence trees in the most frequented places often bear abundantly while the crops on those more remote are destroyed.

In one case, a string from a pump-handle fastened to a tree, by the repeated shaking thus given,

preserved the fruit. But the best remedy among the first class of expedients, and indeed one of the most thoroughly effectual ever yet devised, is to jar the insects from the tree upon white sheets spread beneath, and destroy them at once by a pinch of the thumb and finger. While lying upon the sheet they may not be distinguished by the unpracticed eye from the withered blossoms; but a moment of attention obviates this difficulty. A quick and sudden jar is important, and may be given by the stroke of a mallet, upon the short stump of one of the smaller limbs, sawed off for this purpose, and which prevents bruising the bark. David Thomas, (who first proposed this method,) in a communication to the Genesee Farmer, in 1832, says, "Not three days ago, I saw that many of the plums were punctured, and began to suspect that *shaking* the tree was not sufficient. Under a tree in a remote part of the fruit garden, having spread the sheets, I therefore made the following experiment: On *shaking it well*, I caught *five* curculios; on *jarring it with the hand*, I caught *twelve* more; and on *striking the tree with a stone*, *eight* more dropped on the sheets. I was now convinced that I had been in an error; and calling in the necessary assistance, and using a hammer to jar the tree violently, we caught in less than an hour more than two hundred and sixty of these insects."

The same successful cultivator has pursued this

course ever since ; and when the remedy has been daily and unremittingly applied, he has never failed to obtain abundant crops of plums, nectarines, and apricots, even in seasons where these insects have elsewhere committed the most destructive ravages. In some years, more than two thousand insects have been thus destroyed.

The best time for this work is in the cool of morning, when the insects are stupid from cold, and will drop quickly. It should be commenced very early in the season, as soon as the fruit begins to set. A few minutes are sufficient for many trees, if two boys can be had to carry the sheets, which should be kept stretched by cross sticks across the ends. A little work for the season, may thus save entire crops.

2. The second class of remedies includes those for destroying the fallen fruit, as soon as it drops, and before the larvae escape to the earth.

One of these consists in beating the ground smooth beneath the tree, sweeping up the fallen fruit daily, and feeding it to hogs. Paving with brick answers the same end. Confining a sufficient number of geese or swine among the trees, to pick up the fallen fruit, accomplishes easily and effectually the same purpose. It does not, of course, save the present crop ; but where tried for many successive seasons, it has uniformly afforded abundant crops. The planting of plums, nectarines,

apricots, and the earliest peaches, separately from the rest of the trees, for the confinement of swine, should not be forgotten.

The application of salt under the trees is said to prevent the ravages of the curculio. To determine its efficacy, and the quantity the trees will bear, further experiments are desirable. From one to two pailfuls of brine for one tree have been tried, and though killing grass and weeds, have not injured the tree.

Black excrescences, supposed to be from the attacks of an insect, but doubted by some, spread from one part of the tree to another, and from tree to tree, and unless speedily checked cause death. The only remedy known, but which if promptly, fearlessly and unremittingly applied, has never been known to fail, is the immediate excision and burning of the affected branches. But the same spirit of procrastination, which neglects the spread of this evil till too late, and puts off till to-morrow the extinguishment of the city conflagration, has resulted in the total loss of some of the finest plum orchards in the country.

CHAPTER VII.

THE CHERRY.

THE cultivated varieties of the cherry consist of two distinct classes of sorts ; the first, comprising the Mazzards, Hearts, and Bigarreaus, is characterized usually by the tall upright growth and pyramidal form of the tree, by the large, vigorous, and straight young branches, and by a sweet or bitter, but not a sour taste. The second class, or round-fruited, including the Dukes, Morelloes, and the common pie cherry, has small, irregular, and thickly growing branches, and a decidedly acid fruit.* Observation will soon enable any one to distinguish these two classes, even where the trees are not more than a foot in height. It is the former only that are valuable as stocks for grafting and budding, on account of their straight and rapid growth.

Cherry stocks, in common with those of other kinds of fruit, are much the best when raised from seed. The stones, as soon as they are taken from

* The French divided their cherries into *griottes*, or tender-fleshed [sour]; *bigarreaux*, or hard-fleshed; and *guignes*, or small fruits. *Loud. Enc. Plants.*

the fruit, should be dried only enough to prevent their becoming mouldy, and then mixed with an equal quantity of clean moist sand. The sand preserves a proper degree of moisture till early the following spring, and admits of their easy separation in planting. If they become much dried, vegetation is wholly prevented.

The seeds should be planted in spring, as soon as the ground is open, as they sprout and grow on the first approach of warm weather. The distance apart should be the same as for the peach and apple, and the same directions also apply to their removal to nursery rows ; but they are not to be headed down at the time, as is practiced with the peach.

In propagating the slower-growing, round-fruited varieties, good trees are soonest obtained by grafting or budding them at standard height into large straight stocks. If grafted, they soon form a handsome head ; if budded, care must be taken by judicious pruning to prevent the young shoots from growing all on one side.

Great difficulty is often experienced in successfully grafting the cherry. The operation succeeds best when performed very early in spring, before the buds have swollen. After this period, it is usually attended with failure.

Budding has also been found difficult. It can only succeed with thrifty, freely growing stocks, at or a

little after their most vigorous stage of growth, which is scarcely ever later than the middle of summer. If too early, the new bud has not become sufficiently mature to withstand the change; and if too late, its adhesion to the stock cannot take place.

For standard trees, the soil should be dry and fertile. On moist soils, they do not flourish. *Pruning* is rarely practiced, and not often needed; but when the fruit suffers from crowded branches and stunted growth, this operation would be doubtless beneficial.

VARIETIES.

In many parts of the country, the cultivation of bad varieties, to the exclusion of good, has been more practiced than with any other kind of fruit; and many intelligent cultivators, have never seen the finest sorts. Even those who have the best, have perhaps never seen them ripe; as picking them, when not full grown, and but half matured, is almost universal. The depredations of birds and boys, often compel the cultivator to resort to this practice from necessity. But if some varieties could remain two weeks longer than usual on the tree, the improvement in their fine qualities would be such that they would be scarcely recognized.

Among some of the best are the following:

I. HEART-SHAPED FRUIT.

May Bigarreau. This appears to be the earliest variety of value. Fruit medial size, oblong—heart-shaped, dark red, and of good, but not high flavor. An abundant bearer. Ripens the first of sixth month (June,) with the Early May, the earliest sour cherry, which from its dwarfish growth and poor bearing, is scarcely worth cultivation.

Black Tartarian. Fruit, when not crowded, of large size, sometimes an inch in diameter, heart-shaped, the surface slightly wavy or irregular, sweet and very fine; not of so high flavor as some others, but on the whole decidedly first-rate and well worthy of cultivation.

Elton. Large, light red, and of exceedingly rich and delicious flavor, by many regarded as the finest of cherries.

*Yellow Spanish.** Very large, yellowish red, of fine but not of the highest flavor, a great and constant bearer, and worthy of a place in all collections.

Florence. Large, light red, of excellent flavor, ripening late, a fruit of the highest character.

Knight's Early Black, Large White Bigarreau, White Heart, Downton, Black Eagle, and others, are also of first-rate quality.

II. ROUND OR SOUR FRUIT.

Early Richmond, or true Kentish Red. Ripens

* Known also as the Graffion, and the White Bigarreau of Manning.

with Black Tartarian; when fully matured of good size, tender, rich, juicy, acid.

May Duke. Fruit large, rich, excellent, when ripe nearly black. Commences ripening with Black Tartarian, and continues to ripen often for several weeks, the fruit on one part of the tree being fit for eating, while on other parts it may be nearly green. Hence propagating from different branches has produced early and late trees of the same variety, to which different names have been given. The May Duke is usually gathered before it has attained full size, and but half its flavor.

Carnation. Large, fine, handsome, ripening a month after Black Tartarian, or early in 7 mo., (July.)

THE DISEASES AND ENEMIES,

To which the cherry is liable, are few and not formidable. After the young trees are procured, they are consequently of remarkably safe and easy cultivation.

There are however some varieties which are liable to black excrescences on the branches, which, gradually increasing and extending, destroy the tree. These are supposed to be the work of an insect. The only means of arresting their progress, and which, when vigorously and unremittingly applied, does not fail, is to cut off the injured branches at once, and commit them to the fire.

The black aphis, or plant louse, is often very injurious to young trees in the nursery, causing a stunted and distorted growth, and when abundant on newly grafted trees, sometimes destroying them.

The best remedy is the application of whale oil soap. A teacupful is dissolved in a pail of water, and applied by a syringe, or by the immersion of infested branches, which causes the immediate death of the insects, and must be repeated every few days till no more are found.

The "Cherry Slug," (fig. 37,) when in large numbers, does serious injury by eating the leaves.



Fig. 37.

This animal, which appears to be the larva of an insect, is about half an inch long, and dark greenish brown when filled with food.

Its smooth, shining, and jelly-like skin, and snail-like appearance, have given it the name "Slug." It may be repelled by dusting the cherry leaves regularly, while wet with dew, with dry fresh ashes.

Perhaps the greatest enemy to the cultivation of the cherry, next to lawless boys, is the small brown, crested bird, known as the *Cedar bird*. These birds will in a short time, eat, mutilate, and pollute, all the best fruit on a tree. The only effectual remedy appears to be powder and shot. They soon become fearful and less destructive. A net thrown over the tree, would doubtless afford protection, and might be done in case of some choice varieties.

CHAPTER VIII.

THE GRAPE.

PROPAGATION.

THE vine is propagated from seed, layers, cuttings, and by grafting.

Seed are used for obtaining new varieties, by cross fertilization, as already described in this work.

Layers are the easiest and best way of propagating existing varieties. The middle of the new shoots are buried early in summer, in a few inches of soil, into which roots will be sent by autumn, when they are to be removed from the parent plant. They may be laid in the soil together, till spring ; or set out at once. One layer will usually make two plants, by cutting in two in the middle.

Cuttings, for open air culture, are inferior to layers in vigor of growth and certainty of success. They are, however, sometimes useful and necessary. They should be taken from the vine in winter, from the most vigorous last summer's shoots. They should be a foot or more long ; a portion of the old wood is useful, and they are to be buried in a sloping position, in a deep, rich, light, and rather moist soil, with one bud above ground. Suc-

cess is more sure, if two or three inches of manure is then spread upon them, which keeps the soil moist. Before the following winter, the new shoot should be cut down to two or three buds, and the whole covered by a slight hilling with the hoe, as young plants are often destroyed by winter the first year.

Grafting is seldom practiced and rarely needed. It is however, sometimes useful in replacing a large worthless vine with a fine one, in much less time than by digging up and setting out a new plant, a single year's growth on a vigorous stock, being often sufficient to produce good crops. Rendering tender grapes harder, by insertion into hardy stocks, is well worthy of trial. To prevent "bleeding," it should be performed when the sap is not in motion, or, if in spring, upon the root below the surface.—See *Appendix*.

The *soil* for the grape, as for most fruits, should be deep, fertile, and with a *dry bottom*. The grape requires a mellow and clean surface. The hardy American varieties, it is true, grow and bear with neglected culture; but the superiority both in quantity and excellence more than repays good management.

The *distance asunder* may vary with circumstances. Eight feet is usually adopted. Rapid growers may need more space, and old vines need more than young ones.

Trellis, for the support of vines. These are usually made by setting tall upright posts, and nailing to them light horizontal rails at different distances from the ground. *Wire trellis* is made by driving successive horizontal rows of large nails into the posts, about one foot from each other, and stretching wires from post to post by passing once round each nail, till the trellis is completed. This mode of construction is cheap and durable, and enables the grapes to support themselves by the tendrils, which clasp freely the small wires. The annexed figure,

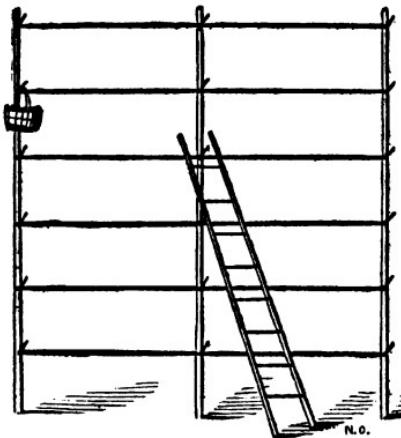


Fig. 34.

(fig. 34,) represents a good and cheap grape trellis, described in the Cultivator by J. M. Harlan. The posts are six feet apart and ten or twelve feet high, and stiff enough to support a ladder in gathering. Pins, pointing upwards, in rows two feet apart,

support horizontal poles; and projecting six inches from the posts, the basket may be hung upon them in gathering. A trellis is best if running north and south, to receive the sun on both sides.

Pruning and Training. The hardy American grapes are often much neglected in pruning, and this neglect is sometimes even commended. But as they are liable to the same laws of growth as fruit trees, there can be no question that like them they are benefited by thinning out superabundant shoots, and promoting the vigorous growth of fewer branches.

Various modes are adopted in pruning grapes for the trellis. The great leading object should be, to have a proper number of strong growing branches, evenly distributed over the surface. For this purpose, old and irregular branches should be removed, that their places may be supplied by new ones from the dormant buds near their base.

A general rule for all grape pruning, is to cut down all shoots late in fall or in winter, to three or four buds; and new shoots should start as low down as possible, to form the future bearing wood; otherwise the old wood gradually extends upwards to the top of the frames.

The annexed figures exhibit two modes of training, variations in which may be made to suit circumstances, and the preferences of the cultivator. The first is the fan or fruit-tree method, in which

the branches are evenly but irregularly spread over the surface of the trellis, and the shoots shortened



Fig. 35.

down to the stump, as space and vigor of growth require. (fig. 35.) The second, (figure 36,) exhibits a

more regular and systematic mode, and when once understood, requires less judgment and skill for

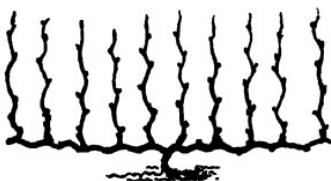


Fig. 36.

performance, and is on the whole decidedly superior. Two branches are first obtained by heading the young plant down to

two buds. These branches grow upright, and are afterwards bent down horizontally. The summer growth is shortened every winter by pruning, but is suffered to extend a little farther each year, until of the desired length, or about four or five feet each way from the center. From these horizontal branches, the new fruit bearing branches grow, every alternate one being cut down in autumn or winter to a good bud for a new shoot, and the others left to bear fruit the next summer; one-half of the upright shoots being thus in bearing, while the other half are growing for a crop the next year.

Vines of the Isabella, and some other hardy varieties, may be trained on trees; and having thus much space for growth, will in a few years bear large crops. They may thus cover shade trees on the farm, being protected while young from sheep and cattle. L. B. Langworthy of Rochester, had a single vine of the Isabella, ten years old, thus trained, which yielded from ten to fifteen bushels a year.

VARIETIES. These may be divided into two distinct kinds. The first includes the American hardy grapes, some of the best of which are varieties of the *Vitis Labrusca*; the second contains the exotic grapes, or varieties of the *Vitis vinifera*.

I. AMERICAN HARDY GRAPES.

Isabella. A luxuriant grower, and a great and uniform bearer. Fruit slightly oval, about five-eighths of an inch in diameter, sweet, slightly musky, high flavored and delicious. In short and unfavorable seasons, it does not fully ripen in the more northern parts of the United States. The *Alexander* much resembles it, but is sourer and inferior in flavor.

York Madeira. Smaller, earlier, and hardier than the Isabella, and free from its pulpy core and muskiness; it is hence preferred by some. In growth and leaf, it is precisely similar, but smaller in size.

Catawba. A free grower and abundant bearer. Fruit round, a little larger than the Isabella, reddish brown inclining to purple, juicy, rich, sub-acid.

Bland. Resembles the Catawba, but smaller and of lighter color. As far north as Boston and Rochester, it ripens only in favorable seasons or in warm places. When ripe, it is a fine, juicy, acid, and delicious fruit.

The *Clinton* grape, and *Gimbrede's Blue*, are hardy, of good quality, and ripen well in western New-York.

II. EXOTIC GRAPES.

Black Cluster, *Black Orleans*, or *Burgundy*. Fruit and bunches of small size, very thickly set, dark purple, slightly acid, fine and high-flavored. Nearly the only foreign variety of value, which endures our winters without protection; the fruit continues to ripen well in open air, for many years, nearly unaffected by mildew.

White Sweet Water. One of the most delicious of all grapes; half an inch or more in diameter, light green approaching to yellow, nearly transparent; juicy, sweet, and excellent. It ripens early in autumn. The *White Chasselas*, the *Chasselas de Fontainbleau*, and *White Muscadine*, much resemble this variety, and by some are thought to be identical. It requires protection in winter, by

laying down and covering with a few inches of earth.

Black Hamburg, sometimes called *Red Hamburg*. Fruit large, deep purple, regarded as the finest of all exotic grapes, but less hardy than the Sweet Water, and cultivated chiefly in grape houses.

The *White Muscat of Alexandria*, is a large and very fine grape, but requires the heat of a grape house.

DISEASES AND ENEMIES.

Various insects occasionally attack the vine, but they are rarely numerous or formidable. The only serious difficulty appears to be *mildew*, which is confined to exotic grapes. These, especially the White Sweet Water, do well for three or four years, and then become worthless. No means for preventing the disaster appear to have proved entirely successful, except by the successive production of new plants every two or three years, by layers from the old vines, which are then destroyed.

KEEPING GRAPES THROUGH WINTER.

Grapes, packed in large jars, in baked saw-dust, or in cotton batting, by alternate layers of the grape and the packing, and then excluded from the air by sealing the cover with wax or tallow, will keep in a cool place till mid-winter or spring.

CHAPTER IX.

GOOSEBERRY AND Currant.

THE GOOSEBERRY

Is propagated by cuttings. New varieties are raised from seed.

Cuttings should be taken from bearing shoots, and all the buds removed except three or four at the top. The new plants should be trained up to a single stem a foot above ground. A very rich moist soil is best.

The gooseberry has received comparatively little attention in this country, and the English varieties best adapted to our climate have not been sufficiently tested. Many of the larger ones appear much subject to mildew; a defect, however, which is often removed by rich soil, pruning, and good cultivation. English writers enumerate several hundred varieties, some of which have weighed an ounce and a half; but the larger sorts are neither so good in flavor, nor so profitable for culture as those of medium size.

THE CurrANT,

From its hardiness, free growth, great and uni-

form productiveness, pleasant flavor, and early ripening, is one of the most valuable of our summer fruits.

It is propagated, like the gooseberry, from cuttings, for which vigorous shoots of the last year's production, should be chosen. Two or three buds only, at the top of the shoot, should be left; and the plants should be kept trained up to a single stem, till ten inches or a foot high, when the branches should radiate on all sides in an upward direction so as to form a handsome spreading top.

Currants, from their hardiness, usually receive no attention nor culture, but are suffered to become overrun with weeds and grass, and to become crowded with a profusion of suckers. Small and inferior fruit is the result. A great improvement both in size and quality, is made by rich soil, good cultivation, and judicious pruning. The difference in flavor between fruit ripened on well trimmed branches, with air and sun freely admitted, and that which is shaded by a dense growth of leaves and branches, is greater than most would believe.

The *Red* currant possesses the highest flavor; but the *White*, being less acid, is by many preferred. A mixture of the two sorts, makes an agreeable dish for the table. Of the improved varieties, the *Red Dutch*, *Knight's Large Red*, *Knight's Sweet Red*, and the *White Dutch*, are recommend-

ed as among the best in the Catalogue of the London Horticultural Society. But rich soil, clean culture, and good pruning, have doubled the size of our common varieties.

CHAPTER X.

THE RASPBERRY.

Most varieties are increased with great facility by suckers; a few, as the American Black and American White, are propagated readily by layers, the tips of the recurved branches when slightly buried, soon taking root. New varieties are raised from seeds, and come into bearing the second year.

The soil for the raspberry should be rich and moist, and an admixture of swamp muck is useful. The more tender varieties, as the White Antwerp, may be raised on higher, drier and firmer spots of ground, being there less liable to severe frosts, in cases where winter covering cannot be applied. A shaded situation is usually preferred.

The culture is simple. It consists in pruning each spring, keeping all weeds and grass well cleared away from the stems, and the soil kept mellow and clean by cultivation.

The pruning should be done early in spring. All dead stems are to be removed, grass and weeds cleared away, and all the smaller shoots cut off even with the ground, leaving only four or five of the best of the last summer's growth for future

bearing; these are to be cut off three or four feet high, and neatly tied together, using a stake to stiffen them if necessary. In tying, they should be allowed to spread slightly at the top in the form of a wine-glass. The distance apart should be three or four feet.

In many parts of the northern states, some tender varieties, and more especially the White Antwerp, need winter protection. This is easily given by covering the stems when prostrate, with a few inches of earth, placing a small mound of earth against the bottom of the stems before laying them down, to bend upon and prevent breaking. This covering is to be removed early in spring.

The best of well known varieties, are the Red and the Yellow or White Antwerp, "which hold a similar rank in this class of fruit to that occupied by the Red and White Dutch among currants."* The *Barnet*, the *Cretan Red*, and the *Franconia*, are also recommended as of fine quality, but they have not yet been extensively cultivated in this country. The *Black American* or wild raspberry, (*Rubus occidentalis*), affords fruit of very fine flavor, which might doubtless be much improved by cultivation.

A plantation of raspberries will continue in bearing five or six years, when it should be renewed

* Cat. of Lond. Hort. Soc.

CHAPTER XI.

THE STRAWBERRY.

THIS delicious fruit, so universally esteemed, is much neglected in cultivation. Failure from bad management has contributed to this neglect.

The requisites for success are,

1. A good rich soil;
2. Clean cultivation between the rows.
3. A renewal by planting once in three years;
4. Selection of good varieties.

Soil. Any deep rich soil, which is good for corn or potatoes, will afford fine crops of strawberries.

Clean cultivation is of the greatest consequence, and by far the most economical way to procure a given amount of fruit. This may be accomplished with one quarter the usual expense by horse cultivation. Let the rows extend across the garden, and if two feet apart, they will freely admit a horse between them.

A renewal of the planting may be effected every three years, whether hand or horse cultivation is employed, by the spontaneous growth of the plants, as follows:—Plant the rows, in the first place, from two to three feet apart, and the plants a foot asun-

der in the rows, and keep them clean as already described. When a new planting is needed, let the runners extend and fill up these spaces with new plants; and then spade under by hand, or turn under with a furrow, the old rows, keeping the ground clean where they stood, until a new planting is needed. In this way, the productiveness of the plantation may be preserved an indefinite number of years, and the overgrowth of old beds by grass, and the setting out of new beds by hand, are at once avoided.

Where it is requisite to form new beds by transplanting, late in summer or very early in autumn is a proper time for the work, if the weather be not very dry. Watering at the time should not be omitted. Early in spring is also attended with success. But late in autumn is often attended with failure, from the young plants being thrown out or destroyed by frost; a disaster which may be in part prevented by treading the soil closely about the roots before freezing, and by a covering of leaves, straw or chaff. New plants, only a year old, are always better than those which are older and have already borne fruit.

SELECTION OF VARIETIES.

The *Duke of Kent*, a small variety, of good quality, is the earliest known, usually ripe on or before the first day of summer. The *Large Early*

Scarlet is twice the size, of fine flavor, and only three or four days later. *Hovey's Seedling*, a week or two later, is one of the finest very large sorts, and when planted near a staminate variety, as either of the two preceding, it becomes very productive. For this purpose a few staminate plants may be distributed at convenient intervals through the bed ; or every third or fourth row may be a productive staminate variety. *Ross' Phænix* is a very large, productive, and high-flavored strawberry, and one of the finest for the climate. The *Prolific Hautbois* is a large, rather oblong fruit, very productive, and much admired by those who esteem the peculiar rich musky flavor of the Haut-bois. Among the newer foreign sorts, and which have not perhaps been sufficiently proved for this climate, are *Myatt's British Queen*, of great size and fine quality ; *Myatt's Deptford Pine*, also very large and fine, and more hardy ; *Swainstone's Seedling*, large and of fine flavor ; and *Elton*, a large, rich flavored, late variety.* The *Red* and

* Much discussion has arisen from the supposed dioecious character of some varieties; or barrenness, resulting from imperfectly formed flowers.

It is well known that fertility in all flowers, is caused by fertilizing the pistils with the pollen or dust from the stamens. Where both are perfect in the same flower, no difficulty can exist. But if one or the other is imperfect or wanting, sterility must result. If the stamens are absent, pollen from other flowers may supply the deficiency. But if the pistils are imperfect or gone, there is of course no remedy.

The Wood and Alpine strawberries, and some other va-

White Alpine, though inferior in flavor, continue in bearing, in moist shady places, through most of the season; the *Bush Alpine* bears still later, an instance occurring where a half pint was picked on the first of 12 mo. (Dec.)—and being free from runners, it might be used as edging to flower beds. Several other varieties are much admired by different cultivators, a selection from which must be left to taste and circumstances.

ieties, possess perfect flowers; but some of the larger and more highly improved sorts, appear often to have imperfect flowers, and are accompanied with barrenness. Some have supposed these to be really dioecious, or permanently staminate or pistillate; but if so, any single productive variety must always be pistillate, as, having increased by runners from a single original seedling, its character in this respect cannot change. Hence, it would always need the fertilizing influence of some other, nearly allied variety, planted near, but not so as to intermix and cause confusion among the roots.

The more common opinion is, that the flowers of certain varieties become imperfect by cultivation or other controlling causes, in a manner analogous to that by which stamens are converted into the petals of double flowers, and by which their fertilizing power is known to be lost. The opinion just stated, is strengthened by the fact that some varieties on very rich ground and with high culture, though flowering abundantly, are rendered comparatively barren, unless fertilized from other flowers, while they are found to be productive under different circumstances.

Those who maintain the distinct dioecious character of the strawberry, affirm that the staminate plants increase more rapidly and obtain the ascendancy; and hence the reason why beds often become gradually sterile, which is only to be prevented by destroying the staminate plants.

CHAPTER XII.

WORK IN THE ORDER OF TIME.

FIRST MONTH, JANUARY.

TREES not prepared against attacks of mice, as directed under 11 mo., should have the snow trodden compactly round them, soon after its fall. Prune orchards; cut grafts; trim hardy grapes; as described already under these respective heads.

SECOND MONTH, FEBRUARY.

Work described under last month, may be performed, if not already done,—as pruning grapes and fruit trees, and procuring shoots for cuttings and for grafts. Root grafting may be commenced, as described in the chapter on the apple. Caterpillars' eggs, near the ends of the branches, should be clipped off and burned.

THIRD MONTH, MARCH.

Unpruned grape vines should be trimmed without delay; trees in bud should be headed down; gooseberries and currants pruned; cherry and plum trees grafted in mild weather; raspberries pruned

and tied to stakes when the weather admits ; cherry stones for stocks, planted as early as possible ; apple and other seeds soon after ; peach stones cracked and planted ; and root-grafting may be continued through the month. Caterpillars' eggs, not already removed, should be attended to without delay, as described under "The Apple."

FOURTH MONTH, APRIL.

Tender grapes and raspberries, should have their winter covering removed ; strawberry beds cleaned and dressed,—and new beds set out ; raspberries pruned and tied to stakes if not already done ; cuttings of grapes, gooseberries, currants, and quinces, put out ; the seeds of all fruit trees as speedily sown as possible,—the cherry first, then apples, pears and plums, and lastly peaches ; fruit trees transplanted as soon as the ground will admit, transplanting the hardiest trees first ; seedlings for stocks and all root-grafted trees should be transplanted ; if the work be late, dip all the roots in mud before setting out, and the danger will be greatly lessened, and the growth unchecked.

FIFTH MONTH, MAY.

The work of last month should be finished as speedily as possible. All young weeds springing up, should be destroyed at the outset, and save nine-tenths of the labor ; shoots around young

grafted and budded trees, rubbed off; crooked trees staked up; the peach and apple examined for the worm and borer; and layers made for propagating the quince.

SIXTH MONTH, JUNE.

The rapidly growing season having now arrived, no work is more important than keeping all young trees widely and deeply spaded round, or otherwise deeply cultivated and kept clean. Strawberries, raspberries, gooseberries, and currants, need the same attention. Young trees in the nursery are to be straightened up and staked, and useless shoots at the bottom rubbed off. Vines should be trained, and fruit thinned out on overbearing trees. Constant attention must be given to the curculio, as already described, and a strict watch kept for fire-blight on the pear, and black-knot on the plum.

SEVENTH MONTH, JULY.

Thorough and clean cultivation is to be continued. If the soil should become very dry, and young trees need watering, several inches of the surface should be first removed, and replaced after watering. Small trees should be staked up and trimmed; and shoots from buds tied to the stock above them, before the wood becomes stiff. Cherries and plums should be budded the last half of the month; apples near the end. Grape and other layers should

be made. Finish the destruction of the curculio, and keep an eye to black-knot, and fire-blight, and the peach worm and borer.

EIGHTH MONTH, AUGUST.

Clean cultivation is to be constantly attended to ; and unfinished work of past month early completed. Apples should be budded early in the month, and peaches from the middle to the end ; and the bandages removed as soon as they begin to indent the stock. If the weather is wet, strawberry plants may be set out, and they will become firmly established before winter.

NINTH MONTH, SEPTEMBER.

Strawberry beds should be made as early in the month as practicable; peach budding, if not finished, should be speedily completed, and all bandages timely removed. Ground may be prepared for transplanting trees, and large holes for their reception may now be made and filled with fertile soil.

TENTH MONTH, OCTOBER.

The work of last month may be continued, and transplanting commenced in the latter part of the month. Hardy trees are best removed in autumn ; tender in spring ; very small trees should be set out in spring to prevent heaving by frost. Peach and apricot trees if set in autumn on heavy soils,

need the precautions mentioned under "Transplanting."

ELEVENTH MONTH, NOVEMBER.

Spade in manure round unthrifty fruit-trees, that the wet soil may absorb its strength; apply a top dressing of manure to strawberry beds, which protects the tender varieties, and the enriching parts soak into the soil without being evaporated. Bank up fresh earth round trees to prevent the attacks of mice. Lay down and cover tender grapes; newly transplanted strawberries should be covered with leaves or manure; protect tender raspberries with evergreen boughs. Transplanting may be continued as directed last month. Grape layers may be removed from the vine, and laid in for winter; if hardy they may be set out. Grafts may be cut, and preserved as described under grafting.

TWELFTH MONTH, DECEMBER.

All unfinished work of the past month should be completed. Grapes may be pruned, the cuttings preserved by packing as grafts. Grafts may be cut any time during winter. Snow should be trod round fruit trees, where they need such protection from mice. Marking sticks and labels for trees, stakes for tying up young trees, and trellis for grapes, may be made at any season of leisure during the winter.

SELECTION OF KINDS

TO SUPPLY A FAMILY WITH FRUIT.

THE number must be governed by the age of the trees in bearing, by climate and circumstances, but more than all else by the cultivation given. A very few trees, ten or fifteen years old, and receiving the best treatment, will afford a larger supply than triple the number with bad management. The following may serve as a guide in selection, the number of each to be increased or diminished with circumstances. When raising fruit for sale becomes an object, a different selection is of course to be made.

12 cherry trees, supplying fruit for 2 months.

8 apricot	"	"	"	1	"
18 pear	"	"	"	9	"
10 plum	"	"	"	3	"
15 peach	"	"	"	2	"
4 nectarine	"	"	"	1	"
33 apple	"	"	"	12	"

100

Two or three square rods of strawberries, two dozen raspberry bushes, two dozen currants, and one dozen gooseberries, will, if well managed, afford an abundant supply for a family.

DESCRIPTIVE LIST OF FRUITS.

SHORT and select lists have been given in the preceding part of this work. The following more extended catalogue is intended for reference.

The experienced cultivator will at once perceive that the characters given may vary materially with climate, soil, circumstances and tastes. An apple of large size at one time, or place of growth, may be only medium at another. The same remark will apply in a greater or less degree to the form, color, quality and time of maturity, of many fruits.

Pears are more liable to vary than most other fruits, and especially the new Flemish pears, which, from their mode of origin, are regarded as peculiarly subject to change. Hence, some of those new varieties, though marked as first-rate, may prove of only second or even third quality, after thorough trial in this country. Some of them have already been found, occasionally delicious, but in most seasons worthless. In addition to this drawback, it must be also remembered, that many varieties are admired because they are *new*—hence some which at first excite general admiration, after a while pass away and are forgotten.

The new and excellent work of A. J. Downing, published since the preceding part of the volume was in type, has been found of essential value in preparing the following lists, especially of the Pears.

DESCRIPTIVE LIST OF FRUITS.

THE size and quality are indicated by numbers: 1 standing for the largest or best, 2 for medium, and 3 for small size, or poor quality.

ABBREVIATIONS.—*K.* kitchen, *C.* cider, *T.* table—*w.* white; *y.* yellow; *r.* red; *p.* pale; *g.* green; *br.* brown; *str.* striped; *rus.* russet; *d.* dark; *or.* orange; *pur.* purple.

LIST OF APPLES.

No	Name.	Form.	Color.	Season.	Use.	Remarks.
1	Acklam's Russet,	3 round	p.y.g.rus	2 early win.	T.	English; great bearer.
2	Alexander,	1 conical	str. y. r.	2 late aut.	T.K.	
3	Alfriston,	1 oblong-rib.	y. g.	3 early win.	T.	English.
4	American Pippin,	2 flattish	dull g. r.	3 spring		Hard and insipid.
5	American sum'r pearmain	2 oblong	st. red.	1 end sum.	T.	Valuable.
6	Aromatic Pippin,	1 flattish	p. y.	2 late sum.	T.	Spicy flavor.
7	Astrachan, red,	2 roundish	crimson	1 summer	T.	Beautiful and excellent.
8	" white,	2 roundish	p. r. & w.	3 summer		Valueless.
9	Aunt's Apple,	1 oblong	str. red.	2 late aut.	T.	Pa.; great bearer.
10	Autumn pearmain,	2 oblong	br. y. r.	1 winter	T.	
11	Baldwin,	1 round-con.	y. r.	1	T.	Excellent; productive.

		R. Y.	T.	winter
12	Barcelona pearmain,.....	2	oval green str.	2 early win. K. English.
13	Bedfordshire sounding,..	1	roundish oblong round-con.	1 late autm. T.K.
14	Belle-bonne,.....	1	oblong round-con.	2 autumn K. Of great size.
15	Beauty of Kent,.....	1	oblong conical oblong-con	1 winter T. Tender and excellent.
16	Belleflower, yellow,.....	1	oblong white,.....	1 early win. T. Valueless.
17	" red,.....	1	conical oblong-con	3 early win. T. Holland; fine.
18	" Brabant,.....	1	round-oblig round	1 winter T. Excellent; productive.
19	Benoni,.....	2	round-flat	1 summer T. Excellent.
20	Black apple,.....	3	round	1 late autm. T. Western New-York.
21	Black Detroit,.....	1	roundish roundish	1 early win. T. English.
22	Blenheim pippin,.....	1	roundish round-con.	2 late autm. T. Excellent; sweet.
23	Bough, early sweet,.....	1	roundish	1 summer T. Sweet; pleasant.
24	" Autumn,.....	2	roundish	2 early autm. T. Russian.
25	Borovitsky,.....	2	roundish	2 summer T. German.
26	Borsdorff,.....	3	round-ovaly.	1 early win. T. English.
27	Borsdorff's Nonpareil,.....	3	flat-ovaly	2 early win. T. English.
28	Bradlick's Nonpareil,.....	3	round	2 winter T.K. Delaware.
29	Brinewold wood pippin,.....	3	oblong	1 early win. T. Of little value.
30	Brownite,.....	2	round	1 winter T. do
31	Bullock's pippin,.....	3	ribbed	3 early win. T. Culinary only.
32	Calville, white Summer,..	2	flattish-rib	2 winter C. Sweet.
33	" white Winter,..	1	round-oblig	2
34	" red Winter,.....	1	round-flat	1 winter T. Supposed French.
35	Campfield,.....	2	conica-fla!	2
36	Canada Reinette,.....	1	conical	1 winter C. New-Jersey.
37	Cann,.....	2	round	2
38	Caroline,.....	1	y. r. str.	1 early win. T. English.

LIST OF APPLES.

No	NAME.	SIZE.	FORM.	COLOR.	SEASON.	USE.	REMARKS.
39	Carthouse, (Gilpin.)	2	round-ob'l.	y. r. str.	winter	T.C. Virginia.	
40	Cathead,	1	round	p. green	autumn	X.	Of little value.
41	Catline,	3	flat	y. r. str.	autumn	T. Very fine; productive.	
42	Chandler,	1	round-flat	str.	1	T. Great bearer.	
43	Chester pearmain,	3	round-ob'l.	d. r. y.	early win.	T.	
44	Chili,	3	oblong	str. y. r.	2	T. English.	
45	Christie's pippin,	2	round-flat	y. r.	autumn	T.	Pennsylvania.
46	Claygate pearmain,	1	round-ob'l.	str.	2	T. English.	
47	Cobham,	1	irregular	y. g. r.	early win.	T.	English.
48	Cockle pippin,	2	oblong	g. y. rus.	late autumn.	T.	English.
49	Coulin, Dutch,	1	round-rib'd	y. g.	winter	T.	English; long keeper.
50	" English,	1	irregular	l. g.	3	K.	
51	" Kewick,	2	ribbed-con.	g. y.	late sum.	K.	Superceded.
52	" Mauk's,	2	round-ob'l.	p. y. str.	2	K.	English.
53	Cole,	1	round-flat	crimson.	2	K.	English.
54	Corlies' Sweet,	1	oblong	y.	2	New Jersey.	
55	Cornish Aromatic,	2	round-an'tl.	red, rus.	late au:min.	T.M.	
56	" Gilliflower,	2	ovate	d. y. g. r.	1	T.	English.
57	Cone's Favorite,	2	flat	p. y.	1		
58	Cos or Caae,	1	round-con.	r. y.	2	T.	Kingston, N. Y.
59	Court Pendu,	2	flat	r.	1	T.	English; proved here.
60	Court of Wick,	3	roundish	r. y. rus.	early win.	T.	English.
61	Cranberry pippin,	1	flattish	y. scarlet	2	K.	Hudson, N. Y.
		2	late autumn.		1		

	K.	K.C.	winter
62 Crab, French,	2 [round-ob'g]f striped	2 late sum.	
63 " Hague,	3 round-flat, streaked	2	
64 " Hewes',	3 round dull red	C.	Only for cider.
65 Danvers sweet,	2 round-ob'g	1 winter	
66 Doctor,	y. r. str.	1 early win.	T.K.
67 Dominie,	2 flat	1 winter	Poor bearer.
68 Downton pippin,	3 roundish dat	y. r.	Abundant bearer.
69 Drap d'Or,	1 round-ob'g	y. r.	English.
70 Domelow's seedling,	1 round-flat	2 late autumn.	T.
71 Dutch Mignonette,	1 roundish or. r. rus.	1 early win.	English.
72 Dutches of Oldenburg,	1 roundish str.	1 early autm.	Holland; very fine.
73 Dyer,	1 round p. y.	1 autumn	Russian; excellent.
74 Early Harvest,	2 roundish y.	1 early sum.	Finest very early.
75 " Julian,	2 roundish y.	1 summer	Scotland.
76 " Red Magaret,	3 round-ovate r. str.	1 summer	Moderate bearer.
77 " Strawberry,	3 roundish r. str.	1 summer	T.
78 Eastern pippin,	2 round g.	2 sprg to aut.	Long keeper.
79 Rapus Spilzenburgh,	1 round-con. r.	1 winter	Unexcelled.
80 Everlasting Hanger,	2 roundish g.		For cider.
81 Fall Harvey,	1 flattish p. y.	2 late autumn.	Essex Co., Mass.
82 " pippin,	1 round-dat g. y.	1 late autumn.	Excellent.
83 Fallowater,	2 conq.-ovate g. brown	1 early win.	Pennsylvania.
84 Fama Gusta,	1 round-ob'g p.	2 autumn	
85 Faneuse,	2 round-flat g. r. str.	1 autumn	Canada; very fine.
86 Father Abraham,	3 flat red	2 winter	T. Virginia.
87 Fearn's pippin,	3 flat scarlet	2 early win.	English; tried here.
88 Fennouillet Jaune,	3 roundish yellow	2 winter	French.

LIST OF APPLES.

No.	Name.	Form.	Color.	Season.	Use.	Remarks.
89	Fennouillet Rouge,.....	3	roundish roundish oval	2 early 2 early 1 autumn	T. French. T. Tree weak and small. K. English.	
90	" Gris,	3	flattish-rib.	2 early win.	T. Tree weak and small.	
91	Flower of Kent,.....	1		2 early win.	T. Tree weak and small.	
92	Franklin's golden pippin,.....	2	oblong	1 late autumn	K. English.	
93	French Violet,.....	2	long-con.	1 spring	T. Long keeper.	
94	Gilliflower, black,.....	1	ovate	1 winter	T. Delicate texture.	
95	" Cornish,.....	2	oblong-rib.	1 late autumn.	T. English.	
96	" red,.....	2	irregular	1 mid-autumn.	T. Virginia.	
97	Gloucester white,.....	2	oblong-rib.	1 winter	T. Maine.	
98	Golden Ball,.....	1	roundish	2 winter	T. English.	
99	" Harvey,.....	3	round	1 early win.	T. English.	
100	" Knob,.....	3	round	3 winter	T. English.	
101	" pippin, English,.....	3	roundish	2 early win.	T. English.	
102	" Reinette,.....	3	roundish	2 early win.	T. Bullock's pin' or Sheep nose.	
103	" Russet, American,.....	3	round-ovate	1 early win.	T. Bullock's pin' or Sheep nose.	
104	" English,.....	2	ovate	1 winter	T. English.	
105	" sweet,.....	1	roundish	1 late sum.	T. Good bearer.	
106	Grant Sachem,.....	1	roundish-rib.	3 early autu.	T. Of little value.	
107	Graniwinkle,.....	2	oblong	dark red	C. Very sweet.	
108	Gravestein,.....	1	fattish	late autumn,	T. Of great excellency.	
109	Greening, northern,.....	2	oblong	1 autumn	K. English.	
110	" Rhode Island,.....	1	fattish	2 winter	K. English.	
111	" Yorkshire,.....	1	fattish	1 win., spr'g	T. English.	
112	Green Sweet,.....	3	fattish	2 winter	T. K. Long keeper.	
				g. y.	spring	K. English.

113	Greyhouse,	roundish	reddish	late autumn	C.
114	Hartford Sweeting,	roundish	y. r. str.	spring	T.
115	Harrison,	ovate	y.	late autumn.	C.
116	Hawthornlein,	fattish	p. y. & r.	late autumn.	K.
117	Hoarty Morning,	roundish	r. y. str.	late autumn.	K.
118	Holland pippin,	round-oblique	g. y.	early autumn.	K.
119	Hubbardson Nonsuch,	oval	y. r. str.	early win.	T.
120	Ingestrie, red,	oval	y. r.	autumn	T.
121	" yellow,	oval	y.	autumn	T.
122	Irish Peach,	round-flat	y. r.	autumn	T.
123	Irish Apple,	roundish	g. y.	winter	T.
124	Jersey Sweeting,	round-ovate	g. y. str.	early autumn.	T. K.
125	John Apple,	conical	y. r.	winter	T.
126	Jonathan,	round-ovate	fine red	1 winter	T.
127	Juneating,	round-ovate	r. str.	1 early sum.	T.
128	" yellow,	roundish	p. g. y.	2 very early	T.
129	Kenrich's Autumn,	roundish	r. g. str.	2 early autum.	T.
130	Kentish Fill-basket,	roundish	y. r. str.	late autumn.	K.
131	" pippin,	oblong	y.	late autumn.	English.
132	Kerry pippin,	oval	y. r. str.	autumn	English.
133	Kilham Hill,	roundish	str.	2 early autum.	T.
134	King of the pippins,	round-con.	str.	autumn	In England, fine.
135	Kirk's Lord Nelson,	roundish	str.	early win.	T. English.
136	Ladies' Sweeting,	round-ovate	str.	winter	T. Excellent.
137	Lady Apple,	flat	r. cheek	winter	T. A fancy sort.
138	" black,	flat	ne'rey blk	winter	T.
139	" Star,	five ribbed	2 spring	French.	

LIST OF APPLES.

No	NAME.	SIZE	FORM.	COLOR.	SEASON.	USE.	REMARKS.
140	Lady Finger,.....	2	long con. oval	g. r. y.	3 early 2 early 2 early	win. win. win.	T. T. T.
141	Lemon pippin,.....	2	five sided	g. y.	1 winter		English.
142	London pippin,.....	2	roundish	p. y. str.	2 early 1 late sum.	win. autumn	T. T.
143	Lovett's sweet,.....	2	roundish	p. y.	2 early	win.	English.
144	Lucombe's seedling,.....	2	roundish	p. g.	2 autumn		Connecticut.
145	Lyman's Large Summer,	1	roundish	g. y. r.	1 autumn		Connecticut.
146	" Pumpkin Sweet,	1	roundish	y. r.	1 autumn		Massachusetts.
147	Lyscom,.....	1	round	red cheek	1 early win.	T.	T.
148	Maclean's Favorite,.....	2	roundish	cr. cheek	2 early autm.	T.	English.
149	Maiden's Blush,.....	2	flat	angl.-ovate	2 late autumn.	T.	Not rich.
150	Male Carle,.....	2	roundish	y. red	2 late autumn	T.	Italian.
151	Margil,.....	3	angu.-ovate	y. r.	3 autumn	T.	Too small.
152	Menugere,.....	1	flat	round-obl'g	1 winter	K.	
153	Michael Henry pippin,..	2	round-obl'g	g. y.	2 early		New-Jersey.
144	Minchall Crab,.....	2	round-flat	br. g. r.	2 early		English.
155	Minister,.....	1	oblong	str.	1 late autumn	T.	Massachusetts; very fine.
156	Monstrous pippin,.....	1	roundish	p. y. w.	2 late autumn	K.	Or apple, Baltimore, &c.c.
157	Morgan,.....	2	oblong-ro'd	p. y.	2 late autumn.	K.	New-Jersey.
158	Mouse or Moose,.....	1	round-obl'g	g. y.	1 winter	T.	
159	Murphy,.....	2	round-obl'g	p. r. & dr.	1 early win.	T.	Ulster Co., N. Y., fine.
160	Newark King,.....	2	conical	red	2 early	win.	Massachusetts.
161	" pippin,.....	2	round-obl'g	y.	1 early	win.	T.
162	New-England sweeting,..	2	oblong	y. g.	2 late autumn	K.	New-Jersey.
163	Newtown pippin,.....	2	roundish	g.	1 spring	T.	Fine keeper.

					T.	Fine keeper.
164	Newtown pippin, yellow,	2	[round, flat] ^b	g. y. r.	1	spring
165	Nonpareil, American,	2	oblong-con	str. r.	2	late sum.
166	" Bradlick's,	3	flat ovate	g. r. rus.	2	early win.
167	" Golden,	3	flat ovate	y.	2	early win.
168	" Old or English,	3	flat ovate	g. y. rus.	3	early win.
169	" Pittmaston,	2	flattish	g. y. rus.	2	late autumn.
170	" Ross,	3	roundish	g. rus r.	2	late autumn.
171	" Scarlet,	2	flat	y.-g. r. rus	2	late autumn.
172	Nonsuch,	2	flat	y.-g. & l. r.	2	autumn
173	Norfolk Beaufin,	1	oblong	dull red	3	winter
174	" Paradise,	2	round-con.	g. y. r.	2	winter
175	Northern Spy,	1	oblong	red	1	spring
176	" Greening,	2	oval	g. brown	2	winter
177	Olive,	2	roundish	g. y. rus.	3	autumn
178	Orange,	2	round-obl'	g. y.	1	early win.
179	Ortley,	3	roundish	y. r.	1	winter
180	Oolin,	1	roundish	y.	1	late sum.
181	Paradise, Summer sweet,	1	roundish	g. y.	1	early autm.
182	" Winter sweet,	1	roundish	g.	1	winter
183	" Dwarf,	3	roundish	p. y.	3	summer
184	Pearmain, Adams,	2	conical	p.-g.y.rus	2	late autumn.
185	" American Sum.	2	oblong	y. r.	1	late sum.
186	" Autumn,	2	oblong-cony.	y. br.	2	autumn
187	" Barcelona,	2	oval	y. r.	2	early win.
188	" Blue,	1	conical	d. r.	1	early win.
189	" Federal,	2	conical	r.	1	early autm.
190	" Golden,	3	conical-an.	y. or. r.	2	autumn

No	NAME.	FORM.	COLOR.	SEASON.	USE	REMARKS.
191	Pearmain, Laneb Abbey,	oval	g. y. r. r. rus.	1 winter early autm.	T.	English.
192	" Loar's English	roundish	y. r. str.	2 early win.	T.	
193	" Long Island;	oblong	y. r. rus.	1 early win.	T.	
194	" Royal,	round-flat'h	r. rus.	1 early win.	T.	
195	" Sweet,	round-con.	d. r.	1 early win.	T.	Connecticut.
196	" Winter,	round-obl'g	g. y. r. crimson	1 winter 2 early autm.	T.K	productive; fine.
197	" Scarlet,	conical	y. rus.	3	T.	English.
198	Pearson's pippin,	roundish	y. rus. l. r. str.	1 autumn	Bak.	English; of little value.
199	Peach-Pond sweet,	flatish	l. r. str.	1	T.	Dutchess Co., N. Y.
200	Peck's pleasant,	roundish	g. y. rus.	1 winter	T.	Excellent; fair.
201	Pennington seedling,	flat	2	winter	T.	English.
202	Pennock,	roundish	d. red	2	spring	Good keeper.
203	Philadelphia pippin,	round	r. y. grey	1 autumn	T.	
204	Pickman,	round	l. yellow	1 winter	T. K	New England.
205	Pomme Grise,	flatish	russet	1 winter	T.	Canada.
206	" Roi,	oval	red	2	T.K	Normandy.
207	" Royal,	round-obl'g	y. w.	1 winter	T.	Connecticut; very fine.
208	Porter,	oblong-con	y.	1 early autm.	T.	Fine and productive.
209	Poveshon,	flat	red	2 early autm.	C.	For cider; N. J.
210	Priestly,	round-obl'g	bull l. r.	2 winter	T.	Pensylvania.
211	Pumpkin Russet,	round	p-y-g. rus	1 autumn	T.	New-England.
212	Quarrenten, red,	round-flat	crimson	2 late sum.	T.	English.
213	Queen, Summer,	round-con.	y. r.	1 late sum.	K.	Excellent for cooking.
214	" Winter,	conical	red	2 early win.		New-Jersey.

					T.	
215	Quince Apple,	1	flat	y.	2 late autumn.	Excellent.
216	Rambo or Romanite,	2	flat	p. r. y.	1 late autumn.	T.
217	Rambour d'Ete,	2	flat	p. g. stirr	2 early autm.	T.
218	Ramsdell's sweeting,	1	oblong	red	1 late autumn.	Conn.: very productive.
219	Redling,	2	round-obl'g	red	1 spring	Good keeper.
220	Red and Green sweet,	1	round-obl'g	g. y. red	2 late sum.	
221	Reinette, Canada,	1	conical-flat	g. y.	1 winter	T.
222	" Golden	3	roundish	y.	1 late autumn.	T. English.
223	" Victorious,	1	oblong	p. warty	early win.	T. German.
224	" White Spanish,	1	round-obl'g	g. y.	1 winter	T. Spanish.
225	Revelstone pippin,	2	irregular	g.y.r. rus	1 late sum.	T. Scotland.
226	Ribston pippin,	2	roundish	g. y. br.	1 early win.	Introduced from England.
227	Roman Stem,	2	round	y. rus.	1 early win.	T. New-Jersey.
228	Roseau d'Automne,	2	round	y. r.	1 early autm.	T. English.
229	Rose Apple of China,	1	conical	g. r. str.	2 autumn	T.
230	Round 'Top,	2	oblong	y. g.	1 winter	T.C. New-Jersey.
231	Russet, English,	2	ovate	p.g.y.rus	1 sp'ing&sum	Productive; great keeper
232	" Cooper's,	3	oblong	p. y. rus.	1 winter	T.C. N. J.; Growth irregular.
233	" Long Island,	3	oblong	y. y.	2 winter	T.
234	" English Golden,	2	ovate	y. rus.	1 winter	T.
235	" American Golden,	2	round-ovate	y. rus.	1 early win.	Fine and productive.
236	Pine Apple,	1	round-ovate	g. y. rus.	1 autumn	T. English.
237	" Putnam,	2	flattish	y. rus.	1 spring	T. Ohio; excellent.
238	" Powell's,	3	flattened	y. g. rus.	1 late autmn.	T. English.
239	Roxbury or Boston	2	flattish	y.g.br.rus	1 spring	Very productive.
240	Royal,	2	flatish	y.g.r.rus.	1 winter.	T.K. English.
241	Shippens,	1	flat	y.g.r.rus.	1 late autumn.	K. Pennsylvania.

No	NAME.	SZIS	FORM.	COLOR.	SEASON.	USE.	REMARKS.
242	Saint Lawrence,.....	1	roundish	str.	autumn	T.	K. Canada.
243	Sam Young,.....	3	flattish	g. y. rus.	early win.	T.	Irish.
244	Sappon,	2	flattish	r.	autumn	T.	
245	Scrivener's red,	2	oblong-con	red	late autumn.	T.	Maryland and Delaware.
246	Seek-no-further, Cox'e,	1	round-oblg.	p. y. g.	late autumn.	T.	
247	" " Westfield,	1	roundish	yellow.rus	late autumn.	T.	Connecticut.
248	Siberian Bitter Sweet,.....	4	round-ovate	y.	autumn	K.C. Immense bearer.	
249	Crab,	4	roundish	scarlet	autumn	OrK. Ornamental & preserving	
250	" " large red,	4	round-ovate	p. red	autumn	K. Prominent calyx.	
251	" " yellow,	2	round-con.	golden y.	summer	OrK. Excellent and productive.	
252	Sine qua non,.....	2	flat-conical	y.	early autumn.	K.	
253	Spice sweeting,.....	1	round-con.	y. r.	winter	T.	Excellent; rich.
254	Spitzenburgh, Esopus,.....	1	round-con.	r.	1 early win.	T.	
255	" Flushing,	1	round-con.	r.	1 early win.	T.	Strong shoots; flesh white
256	" Kaighn's,	1	oblong-con.	p. r.	3 winter	T.	Tree ugly.
257	" Newtown,	1	roundish	y. r. str.	2 early win.	T.	
258	" White,	1	oblong-con	w. & l. r.	2 late autumn.	T.	
259	Stroat,	2	round-oblg.	y. g.	1 autumn	T.	Albany, N. Y.
260	Sty're,	2	round	y.	late autumn.	C.	For cider only.
261	Sugar-Loaf pippin,	2	oblong-con	p. y.	3 summer	T.	English.
262	Summer Rose or Woolmранs	2	round-flat	y. r.	1 summer	T.	Fine.
263	Surprise or Bloody,	2	roundish	y.	2 late autumn.	T.	Red flesh; fanciful.
264	Swarz,	1	round-flat	g. y.	1 winter	T.	Scarcely equalled.
265	Sweet pippin,	1	flat	grey.r.	3		

266	Sweet and Sour,	1	flat	g. y.	3	winter	K.	Unmatured spots; useless.
267	Lallman sweeting,	2	flat-conical	y. w.	1	winter	T.	Excellent for baking.
268	Leofasky,	2	round-ob'g r.	y. str.	2	summer	T.	Russian.
269	Tewksbury Blush,	3	flat	y.r.che'k	1	spring&s'm	T.	Long keeper.
270	Twenty Ounces,	1	round	y. r. str.	2	autumn	K.	Only for cooking.
271	Vandevere,	2	flat	j. r.	1	early wint.	T.	Delaware; light soils best.
272	Victuals and Drink,	1	oblong	y.-rus.	1	late autumn.	T.	New Jersey.
273	Warren apple,	1	oblong	y. r.	1	late autumn.	T.	New Jersey.
274	Watson's Dumpling,	1	round	y. g. str.	2	late autumn.	K.	Very large.
275	Waxen apple,	2	globular	p. y.	1	early win.	T.	Virginia; very fine.
276	Wells' sweeting,	2	roundish	dull g.	1	early win.	T.	Newburgh, N. Y.
277	Wine apple,	1	roundish	red	1	early win.	T.K.	Very fine.
278	William's red,	1	oblong	red	1	late sum.	T.	
279	Winesap,	2	oblong	red	1	winter	T.C.	Boston.
280	Wood's greening,	2	conical	p. g.	2	winter	T.	New-Jersey.
281	Wool's transparent,	3	flat	g. y.	1	early wint.	T.	
282	Wormsley pippin,	2	round-con.	p. g. y.	2	early autum.	T.	English.
283	Yellow Everlasting,	3	round	p. y.	3	sp'g to aut.	T.	Destitute of flavor.

LIST OF PEARS.

No.	NAME.	FORM.	TEXTURE.	COLOR.	SEASON.	REMARKS.
1	Alpha,	2 obovate	butter'y, fine-gr'	p. y. g. br.	2 mid-autmn.	Belgian.
2	Althorpe Grassane,	2 ro'nd-ob'	butter'y, juicy	g.	2 late autmn.	English.
3	Amande double,	2 necked	coarse-grain'd	y. r.	2 early autmn.	Belgian.
4	Ambrette,	2 roundish		russet	early win.	French.
5	Ambrosia,	2 ro'nd-ob'	butter'y-melting	g. y.	1 early autmn.	French.
6	Amiré Joannet,	3 ro'nd-ob'	juicy be-g dry	g. y.	3 early sum.	The earliest.
7	Ananas,	2 ro'nd-ob'	very juicy	g. y.-rus.	2 mid-autmn.	French.
8	Ananas d'Eié,	1 pyriform	fine, but melt	y. g. br. r'h	2 mid-autmn.	
9	Andrews,	2 pyriform	juicy, melting	y. g. & br.	1 early autmn.	Massachusetts.
10	Angleterre,	2 pyriform	juicy, melting	l. g. rus.	3 early autmn.	
11	Angora,	1 crisp		y. r.	winter	
12	Aston town,	3 rd-turb'i'	butter'y	p. g. br.	2 early autmn.	English.
13	Autumn Bergamot,	2 roundish	coarse-grain'd	g. rough	2 early autmn.	English, 200 yrs old.
14	Autumn Colmar,	2 oblong	butter'y-gritty	p. g.	2 mid-autmn.	Flemish.
15	Bartlett,	1 pyriform	fine-butter'y	y.	1 early autmn.	Williams' Bonchresten
16	Belle de Bruxelles,	1 pyriform	juicy & melt.	y.	2 late sum.	
17	Belle et Bonne,	1 roundish	butter'y-grain'	p. g. y.	2 early autmn.	

18	Belle Lucrative,.....	2	obovate [juicy, melt, sug] p. y. g.	1	early autmn. Excellent.
19	Belmont,.....	2	ro'nd-ob' coarse, juicy y. g. br.	3	autumn For cooking.
20	Bergamot Gaillette,.....	2	ro'nd-ob' buttery, juicy p. g.	2	late autmn. France.
21	" Early,	2	roundish juicy, crisp p. y. g. r.	3	late sum.
22	" Easier,	2	ro'nl-ob' crisp,bec melt p. g. y.	2	winter French.
23	" Gansel's,.....	1	ro'nl-ob' breaking g. y.	2	early autmn. Handsome & showy.
24	" Hampden's,.....	1	roundish crisp & juicy g. y. rus.	2	spring For the kitchen.
25	" Holland,.....	1	[ro'nl-ob'] melting, juicy rough br.	1	early autmn. Coarse grained, rich.
26	" Suisse,	2	roundish melting-juicy striped	2	autumn Feeble growth.
27	" Summer,	3	round juicy, bee'dry y. g. br.	3	summer
28	" " large	2	roundish break, halfbut y. y.	2	early autmn. Free growth.
29	Beurre Rose,.....	1	pyriform melt, very but y. & rus.	1	mid-autmn. Excellent.
30	" Bronze,.....	1	roundish crisp, juicy g. rus.	2	mid-autmn.
31	" Crapaud,.....	2	obovate fine grain, but p. g. y.	1	mid-autmn.
32	" Colmar,.....	1	elliptical crisp,bec melt p. g. y.	2	early autmn. Fine.
33	" d'Amalis,.....	1	obovate coarse, but melt g. y. br.	1	autumn.
34	" de Anjou,.....	1	obovate butt.-sub-acid g. y.	1	early win.
35	" d'Arenburg,.....	1	[obo.-yr'] buttery, melt. l. y. g.	1	mid-autmn. France.
36	" de Beaumont,.....	2	ro'nl-ob' pyriform gritty, melt. p. y. g.	1	winter Needs warm summ.
37	" de Ranz,.....	2	pyriform coarse, half melt y. br. rus	2	late autmn. Much admired.
38	" Diel,.....	1	obovate buttery, melt. p. g.	2	late autmn. Variable.
39	" Duval,.....	2	tapering buttery, juicy g. y.	2	early autmn.
40	" Kenrick,	2	pyriform soft and juicy p. g.	2	autumn Not rich.
41	" Knox,.....	1	melting y.	autumn France.	
42	" Picquery,	1	oblon ob' buttery, melt. g.y.mottl	1	late autumn. Maine.
43	" Preble,.....	1	obovate juicy, melt. y. g.	2	autumn Good bearer.
44	" Romain,.....	2			

No.	NAME.	FORM.	TEXTURE.	COLOR.	SEASON.	REMARKS.
45	Beurré Van Marum, . . .	1 pyriform	juicy, melting	y. rus.	2 autumn	Flemish
46	" Van Mons, . . .	2 pyriform	built, melting	y. rus.	1 autumn	
47	Bezi d'Her,	2 roundish	tender & juicy	g. y. r.	early wint.	Ex' lent for stewing.
48	" de la Motte,	2 obovate	buttery, juicy	y. g.	1 autumn	
49	" de Montigny,	2 obovate	juicy, half but.	y. g.	2 autumn	
50	" Vaef,	2 obovate	melting, juicy	p. g. rus.	2 early wint.	
51	Bishop's thumb,	1 pyriform	juicy, melting	g. rus.	1 autumn	Surface knobbed.
52	Black Worcester,	1 obl'g. ob'	hard, coarse	g. rus.	early wint.	Ex' lent for cooking.
53	Bleeker's Meadow,	3 roundish	cusp'd, hard	y.	3 late aut.	Of little value.
54	Bloodgood,	2 turbinate	buttery, melt.	y. -rus.	1 late sum.	Excellent.
55	Bon Chretien Fondane,	1 round-ob	juicy, melting	p. g. rus.	2	
56	" Summer,	1 pyriform	juicy, breaking	p. g. rus.	1 early autm.	Large and fine.
57	" Spanish,	1 pyriform	half-breaking	d. y. r. cp.		A fine kitchen pear.
58	" Flemish,	2 obovate	crisp, juicy	p. g. & br.		Ex' lent for cooking.
59	" Winter,	1 conical		y. r.		
60	Boucquia,	1 oval-turb	juicy	p. y. & r.	2	
61	Broom park,	2 roundish	juicy, melting	brown	early wint.	English.
62	Brougham,	1 ro'nd-ob'	buttery, melt.	y.-rus	late aut.	New; English.
63	Buffum,	2 obovate	buttery	y. r.	2 early autm.	Variable.
64	Burnett,	1 pyriform	grained	b. y.	2 autumn	Massachusetts.
65	Cabot,	1 ro'nd-tur'	juicy, break'g	ruhy. ru.	2 early autm.	Massachusetts.
66	Calebasse,	2 obl. cyl'd	coarse, crisp	y.-rus.	2 early autm.	Belgian.
67	" Grosse,	1	coarse, melt.	g. grey	autumn	Very large.
68	Calhoun,	2 obovate	juicy, melting	p. y.	late autmn.	New; New-Haven.

69 Capiamont,	2 long-tur'	buttery	y.-cin.	2	autumn	Often fine.
70 Capsheaf,	2 ro'nd-ob'	juicy, melt.	y. br. rus	2	autumn	Rhode Island.
71 Capuchin,	1 oval	juicy, crisp	g. p. y.	2	autumn	Belgian.
72 Caillac,	1 br'ad.tur'	hard, rough	y. br.	winter	Baking and stewing.	
73 Charles of Austria,	1 roundish	tender, juicy	g. y. br.	autumn	Belgian.	
74 Chaumontelle,	1 ob'lg.-ob'	melt, butt.	y. br. r.	1	early wint.	Often excellent.
75 Citron,	2 roundish	melting	dull g.	2	late sum.	New-Haven.
76 Clara,	2 oval-pyr'	melt, & juicy	y.	2	autumn	Belgian.
77 Clinton,	1 obovate	soft, buttery	y.	3	late autmn.	Belgian.
78 Colmar,	1 oblyg.-pyr	half-buttery	y.	2	early wint.	Belgian.
79 " Epine,	1 obovate	ro'nd-ob'l melting	g. y.	2	early autm.	Belgian.
80 " Neill,	1 obovate	buttery	p. y.	autumn	Westchester co., N.Y.	
81 Columbia,	1 obovate	coarse, melt.	g. y.	2	early wint.	Westchester co., N.Y.
82 Commodore,	1 obovate	buttery, melt.	y. r.	2	late autmn.	Belgian.
83 Comprete,	2 oblate	py. buttery, melt.	y. g. br.	1	autumn	Belgian.
84 Compte de Lamy,	2 ro'nl-ob'	buttery, melt.	y. br.	1	autumn	Belgian.
85 Comstock,	2 obovate	crisp, juicy	y. r.	2	early wint.	Duchess Co., N.Y.
86 Crassane,	1 roundish	soft, juicy	g. y.	2	autumn	Old French.
87 Crawford,	2 obovate	buttery	y. br.	3	late sum.	Scotch.
88 Croft Castle,	2 oval	crisp, juicy	p. g. y.	2	autumn	Admired by some.
89 Cross,	2 roundish	melting, juicy	y.; rus.	1	early wint.	Massachusetts.
90 Cuisse Madame,	2 pyriform	obovate melting, butt.	y. orange	3	late sum.	Worthless.
91 Cumberland,	1 obovate	buttery, melt.	g. y.	2	early autm.	Rhode Island.
92 Cushing,	2 oblong	oblong	rus.	1	early autm.	Flemish.
93 Darmont,	2 turbinate	juicy, melting	y.	1	late sum.	Very valuable.
94 Dearborn's Seedling,	2 obtuse	py. melting, butt.	y.	1	mid-autm.	Flemish.
95 Delices d'Hartlenpong,	2					

N.	NAME.	FORM.	TEXTURE.	COLOR.	SEASON.	REMARKS.
96	De Louvain,	2	obovate melting, butt. long-pyr'	y.	1 autumn	Flemish.
97	Dix,	1	not fine, melt.	y. rus.	1 autumn	Boston.
98	Doyenne, or Virgaliou,	2	obovate very but, melt	y.	1 mid& late autmn	Nearly unequalled.
99	Gray,	2	obovate very but, melt	rus.	1 late autmn	Excellent.
100	" Panache,"	2	pyriform juicy, melting but, very juicy	striped y.-rus.	2 autumn	Fine, if s'Unted.
101	Duchesse d'Angoulême,	1	obovate melt, juicy	g. y.	1 autumn	French; new.
102	" de Mars,"	2	obovate melt, juicy	y.-rus.	2 late autmn	French.
103	" Orleans,"	1	long-pyr' butt, melting	y.	1 autumn	French.
104	Dumortier,	2	obovate juicy, melting	g. w.	1 early autmn.	Belgian.
105	Dunlas,	2	obovate melt, half but.	y. r.	mid-autmn.	Belgian.
106	Dunmore,	1	ob lg - ob but, very melt	g. br. rus	1 early autm.	English.
107	Easter Beurre,	1	ro'nd - ob buttery, melt.	y. g.	1 win., sprg	Fine, if ripened.
108	Echasserry,	2	ro'nd-ova melting, but.	g. rus.	1 French.	
109	Edward's Elizabeth,	2	obtuse-py buttery	y.	2 autumn	New-Haven.
110	" Henrietta,	2	obovate melting, juicy	y. g.	2 late sum.	New-Haven.
111	" William,	2	obtuse-py buttery, melt.	y. br.	1 early au m.	New-Haven.
112	Elton,	2	oval	g. rus.	early au m.	English.
113	Emeral,	2	obovate buttery, melt.	g. br.	2 early wint.	Belgian.
114	Enfant prudique,	2	obovate melting, juice)	y. br.	late autmn.	Variable and ugly.
115	Epine d'Ete,	2	pyriform tender, melt.	g. y.	3 early autm.	<i>The Summer Thorn</i> .
116	Eyewood,	2	flattened buttery	russet	1	
117	Fig pear of N'pies,	1	ol'g - ob buttery, melt.	r. br.	2 late autmn.	
118	Flemish Beauty,	1	obovate not fine, melt.	y. rus.	2 mid-autmn.	Handsome coarse.
119	Fontaine Van Mons,	2	roundish juicy & melt.	y.	1 late autmn.	Flemish.

120 Forelle,	pyriform	buttery; melt.	g. y.	late autumn.	German.
121 Forme de Délices,	2 obovate	ell. but. dry y. russet	2	autumn	Flemish.
122 Franc Réal "Hiver,	2 roundish	crisp & firm	y. br.	winter	For cooking.
123 Fréderic de Wurtemburg	1 pyriform	juicy & melt.	y. r.	1 early autm.	Often worthless.
124 Fulton,	3 roundish	half-buttery	russet	2	Maine.
125 Genlesheim,	1 obuse	pr gruity-buttery	g. y.	autumn	Flemish; new.
126 Gilogil,	1 globular	firm & crisp	russet	early win.	For cooking only.
127 Glout Moreau,	1 obtuse	ov very melt.but.	g. y.	early wint.	Flemish; very fine.
128 Golden Beurré of Bilboa	1 obovate	fine melt. but.	y.	1 early autm.	Hooper's—Spain.
129 Great Citron of Bohemia	1 oblong	juicy	y. r.	1 mid-autumn.	Germany.
130 Green Chisel,	3 roundish	grity-juicy	g.	2 late sum.	
131 Green Pear of air,	2 obovate	very juicy	g.	3 early autm.	
132 Hacon's Incomparable,	1 roundish	buttery, melt.	y. g. rus.	1 late autm.	English; new.
133 Harvard,	1 ob'ig'ny	juicy, melt.	y. rus.	1 early autm.	Fine for market.
134 Heathcot (Gore's)	2 obovate	melting, butt.	p. g. y.	2 early autm.	Fair and productive.
135 Henry IV,	3 roundy	ju. m. not fine	g. y.	1 early autm.	Needs house-ripening.
136 H. ricart,	2 obovate	buttery	p. g.	2 early autm.	Belgian.
137 Hessel, or Hazel,	2 obovate	juicy	y. g. br.	2 early autm.	Very productive.
138 Higuenot,	2 roundish	half-breaking	y. r.	3	autumn
139 Hull,	2 obovate	grained:melt.	y. g.	Massachusetts: new.	
140 Jalousie,	1 round-ob	coarse	r. rus.	3	autumn
141 " de Fontenay Venéée	2 turbinate	buttery, melt.	y. g. r.	1 mid-autumn.	Handsome; poor.
142 Jaminette,	2 obovate	juicy, melt.	g.	1 early win.	The Josephine.
143 Jargonneille,	2 long-pyr	grained, juicy	g. y. br.	2 summer	Sometimes fine.
144 " French,	2 obvate	coarse, break	g. y. r.	3 summer	Hannibal; poor.
145 Jonnnot,	2 roundish	buttery, melt.	y. br.	1 mid-autumn.	Very slow growth.
146 Juiniene,	2 obovate	buttery	y.	2 late sum.	Bears very young.

LIST OF PEARS.

No	NAME.	FORM.	TEXTURE.	COLOR.	SEASON.	REMARKS.
147	Keiser,	2 conical		g. y.	autumn	European.
148	King Edward's,	1 pyriform	buttery, melt.	y. r.	mid-autumn.	<i>Jackson's Melting.</i>
149	Knight's Monarch,	1 obovate	buttery, melt.	y. g. r.	mid-winter	
150	Lawrence,	1 obovate	melting, juicy	y. g.	1 winter	Flushing, N. Y.
151	Léon le Clerc,	1 obovate	pyr firm, ju. crisp	y. br.	3 winter	Belgian.
152	" " Van Mons,	1 ob'lg-ob'	melt, butt.	y. br.	1 late autumn.	Belgian.
153	Lewis,	2 obovate	grained, melt.	g.	1 winter	Good for market.
154	Limon,	2 obovate	butter, melt.	y.	2 late sum.	Belgian.
155	Little Musk,	3 turbinate	breaking	g. y. br.	3 early sum.	For earliness only.
156	Locke,	2 ro'ndl'ob'	melt, juicy	y. g.	late autumn.	Massachusetts; new.
157	Lodge,	2 pyriform	grit, melt. ju.	g. br.	2 autumn	Pennsylvania.
158	Louise Bonne,	1 pyriform	coarse-melt.	p. g.	3 early wint.	Old French.
159	" " of Jersey,	1 pyriform	juicy, melt.	g. r.	1 autumn	French.
160	Madeleine,	2 obo'pyr'	juicy, melt.	y. g.	1 early sum.	The best very early.
161	Manning's Elizabeth,	3 obovate	juicy very mel	y. r.	1 late sum.	Belgian.
162	Marie Louise,	1 oblo-pyr'	buttery, melt.	g. y.	1 mid-autumn.	
163	Messire Jean,	2 turbinate	gritty	y. rus.	2 late autumn.	Old French.
164	Moccas,	2 obovate	juicy, melt.	y. g. br.	1 winter	English; new.
165	Molleit's Guernsey,	2 oval-pyr'	very melt, buty.	y. g. br.	early wint.	English; new.
166	Moor-fowl Egg,	3 roundish	gritty, juicy	g. br.	3 autumn	Scotch.
167	Museatine,	2 ro'nl'ob'	buttery, melt.	y. g.	1 early autm.	Orange Co., N. Y.
168	Museat Robert,	3 turbinat	tender, juicy	g. y.	2 summer	
169	Napoleon,	2 pyriform	very ju. melt.	g.-y.	1 autumn	Belgian.
170	Naumkeag,	2 roundish	melt, asting?	rus.	2 autumn	Salem, Mass.

171 No plus Meuris, , , , ,	2	roundish buttery, melt. y. br. rus	winter	Belgian.
172 Niell, , , , ,	1	ovovate buttery, juicy	mid-autumn.	Belgian.
173 Pailleau, , , , ,	2	turb.-pyr	early autmn.	Belgian.
174 Paquency, , , , ,	2	pyriform	late autmn.	France.
175 Paradise d'Automne, , , , ,	1	pyriform	mid-autumn.	
176 Passe Colmar, , , , ,	2	pyriform	1 winter	Belgian.
177 Pennsylvania, , , , ,	2	obo.-pyr	mid-autumn.	Philadelphia.
178 Petre, , , , ,	2	buttery	1 autumn	Philadelphia.
179 Pitt's prolific, , , , ,	2	fine, buttery	1 autumn	Poor.
180 Pope's Quaker, , , , ,	2	pyr.	y. br.	English; poor.
181 " Scarlet Major, , , , ,	1	obovate	1 autumn	Long Island, N. Y.
182 Pound or Winter Bell, , , , ,	1	pyriform	2 autumn	Long Island, N. Y.
183 Princess of Orange, , , , ,	3	roundish	3 late sum.	For cooking only.
184 Queen of Low Countries, , , , ,	1	broad-py	2 winter	
185 Quilletette, , , , ,	2	roundish	late autumn.	
186 Raymond, , , , ,	2	ovovate	Belgian.	
187 Reine Caroline, , , , ,	2	nar.-pyr.	mid-autumn.	
188 Rostiezer, , , , ,	2	obl.-pyr.	1 autumn.	Belgian.
189 Roussette de Meester, , , , ,	2	roundish	2 autumn	Belgian.
190 " de Rheims, , , , ,	3	obovate	1 melt. righ	French.
	" Early, , , , ,	2	pyriform	2 early autmn.
191 Seckel, , , , ,	3	obovate	not fine	The early Catherine.
192 Shanks, , , , ,	1	obovate	butt. juicy mlt	2 summer
193 Sieulle, , , , ,	2	roundish	tender, melt.	mid-autumn.
194 Skinless, , , , ,	2	pyriform	buttery, melt.	1 autumn.
195 St. Andre, , , , ,	2	pyriform	juicy, & melt.	2 autumn
196 St. Germanin, , , , ,	1	obovate	fine, melt. but	2 summer
197 St. Germanin, , , , ,	1	pyriform	gritty juicy ml	Valuable.
				Germany.
				2 early wint.
				Old French.

LIST OF PEARS.

No	NAME.	FORM.	TEXTURE.	COLOR.	SEASON.	REMARKS.
198	St. Germain, Prince's,	2 obovate	juicy, melt.	russet	1 winter	
199	St. Ghislain,	2 pyriform	buttery, juicy	y.	1 autumn	
200	Stevens' Genesee,	2 ro'nd-ob.	half-buttery	y.	1 early autm.	
201	Striped Germain,	1 pyriform	juicy, gr., melt.	striped y. r.	2 early wint.	Belgian.
202	Syrian,	2 pyriform	crisp	y. g.	2 late autm.	English.
203	Sucrée de Hoyerswerda, 2	2 obovate	juicy	y.	2 late sum.	Great bearer.
204	Sugar top,	2 ro'nutur'	breaking	y.	3 summer	Common in markets.
205	Sullivan,	2 obl.-pyr.	juicy, melt.	g.y.	2 early autm.	Belgian.
206	Summer Bell or Windsor	1 pyriform	coarse, astrin., juicy, break.	y. g.	3 late sum.	
207	" Bon Chretien, "	1 pyriform	butt. melt.	y. or.	1 early autm.	
208	" Franc Réal, "	2 obovate	juicy	g. bec. y	1 early autm.	
209	" Rose,	2 ro'nt-flat	juicy	y. br.	2 late sum.	The Epine Rose.
210	" St. Germain, ..	2 obovate	juicy	g.	2	
211	Superfoniant,	2 obovate	butt. melt.	y.	1 late autumn.	French.
212	Surpasse Virgallieu ..	2 obovate	buttery	g. y.	3 autumn	Variable.
213	Swan's egg,	3 oval	juicy	g. br.	3 autumn	Old English.
214	Sylvange,	2 ro'nd-ob.	juicy, melt.	g.	2 late autm.	
215	Thompson s.,	2 obovate	butt. melt.	y.	1 late autm.	English; new.
216	Urbanisie,	1 obo.-pyr.	but. very melt.	y.	1 mid-autumn.	Excellent.
217	Uvelale's St. Germain, 1	1 obl.-pyr.	hard, astrig.	y. g., br.	3 winter	Good for cooking.
218	Vallée Franche,	2 obovate	juicy, not fine	p. g.	3 late sum.	
219	Van Buren,	1 obovate	crisp	y.	2	Good for cooking.
220	Verte Longue,	2 long-pyr	juicy	g.	2 mid-autmn.	
221	" panache, " 2	2 long-pyr	juicy	striped g.	2 mid-autmn.	

222	Vicar of Winkfield, . . .	1	long-pyr.	juicy	y.	3	early wint. Good for baking.
223	Virgalieu, or Butter, . .	2	obovate	very but. melt.	y.	1	mid&lateau Nearly unequalled.
224	Virgouleuse,	1	oval-ob.	but. melt.	y. g.	1	early wint. Old French.
225	Washington,	2	oval-ob.	very ju. melt	y., dotted	1	early autm. Varies in size.
226	Wilhelmine,	2	obo-pyr.	melt. butt.	g. y.	1	late wint. France.
227	Wilkinson,	2	obovate	juicy, melt.	y.	1	late autumn. Fine, if ripened.
228	Williams' Early,	3	roundish	half. buttery	y.	1	early autm. Roxbury, Mass.
229	Winter Nellis,	2	rond ob.	very melt. but	y. g.	1	early wint. Flemish; very rich.
230	Yat.	3	turb. pyr.	juicy	russet	1	early autm. Dutch.

LIST OF CHERRIES.

LIST OF CHERRIES.

THE second column denotes the class;—*a.*, indicating heart cherries, tender-fleshed; *b.*, bigarreau do., or hard-fleshed; *d.*, dukes, round, and usually sub-acid; and *m.*, morelloes, round, sour, juicy, thin skin.

The SEASON of ripening is indicated by *early*, *medium*, *late*.

No	NAME.	CLASS.	SIZE	COLOR, RIPE.	STALK.	SEASON.	REMARKS.
1	Amber Guigne,.....	<i>h.</i>	3	pale yellow, r	long	2	late Great bearer.
2	American Amber,.....	<i>h.</i>	2	amber red	long	2	medium Great bearer, handsome.
3	" Heart,.....	<i>b.</i>	1	amber, pink	long	1	early Often spurious.
4	Arch Duke,.....	<i>d.</i>	1	nearly black	medium	1	Often spurious.
5	Belle de Choisy,.....	<i>d.</i>	2	amber	short	1	Very delicate.
6	Belle Magnifique,.....	<i>m.</i>	1	red, mottled	long	2	late
7	Black Corone,.....	<i>h.</i>	3	black	long	2	late
8	" Bigarreau,.....	<i>b.</i>	2	black	long	2	medium Poor bearer.
9	" " of Savoy,.....	<i>b.</i>	1	black	medium	2	medium
10	" New Large	<i>b.</i>	1	black	medium	1	
11	" Eagle,.....	<i>h.</i>	1	nearly black	medium	1	Fine.
12	" Heart,.....	<i>b.</i>	2	black	medium	1	
13	" Mazzard,.....	<i>h.</i>	3	black	long	3	medium

14	Black Tartarian,	black	long	1	early	Very popular.
15	Bleeding Heart,	dark red	medium	2	medium	Poor bearer.
16	Bowyer's Early Heart,	amber, red	early	1	early	Good bearer.
17	Butner's Yellow,	yellow	medium	1	medium	New; productive.
18	" October Morello,	dark red	very late	2	late	New variety.
19	Carnation,	l. r. marbled	medium	1	medium	Fine.
20	China Bigarreau,	r. mottled	long	1	medium	Grows in clusters.
21	Cluster,	red	medium	3	medium	Resembles Black-Heart.
22	Davenport's Early,	black	medium	1	early	Productive; fine.
23	Downer's Late,	red	long	1	late	New.
24	Downing's Red Cheek,	w. r. cheek	medium	1	early	Very fine.
25	Downton,	1. r. red	long	1	medium	Superseded.
26	Early May,	red	short	2	very early	
27	" Purple Guigne,	dark red	short	2	very early	
28	" White Heart,	1. red	medium	1	medium	Tradescant's.
29	Elkhorn,	black	short	1	medium	Excellent.
30	Elton,	1. red	long	1	medium	Excellent.
31	Florence,	r. marbled	long	1	late	Great bearer.
32	Gritley,	black	short	1	late	
33	Hildesheim,	2. y. mottled r.	1	very late		
34	Holland Bigarreau,	1. y. mot. carmi	1	medium	Fine and beautiful.	
35	Holman's Duke,	nearly black	medium	1	medium	
36	Honey,	amber red	long	2	late	
37	Jeffrey's Duke,	red	long	1	medium	The Early Richmond.
38	Kentish Red,	red	medium	2	early	
39	Knight's Early Black,	black	medium	1	early	
40	Large White Bigarreau,	marbled r.	long	1	medium	Orkney of New York.

LIST OF CHERRIES.

No	NAME.	Class.	COLOR, Ripe.	STALK.	SEASON.	REMARKS.
41	Large Red Bigarreau, . . .	b.	1 red	short	1 medium	The Elkhorn.
42	Large Black Bigarreau, . . .	b.	1 black	medium	1 late	Very common.
43	Late Duke,	d. m.	1 dark red	short	3 late	
44	Late Kentish, or Pie,	m.	2 red	short	1 medium	
45	Madison Bigarreau,	h.	2 red, amber	short	1 early	
46	Manning's early Bl'k heart	h.	2 black	1	late	
47	" Late Black,	b.	1 nearly black	long	1 medium	
48	" Mottled,	h.	1 amber, red	medium	1 ear & med	Very rich.
49	Mayduke,	d.	1 nearly black	very shoo	3 late	Poor.
50	Montmorency or Flemish,	m.	2 red	long	1 very late	
51	" Sweet,	h. m.	2 amber, r. mot	medium	2 late	
52	Morello, English,	m.	2 dark purple	medium	2 late	
53	" Common,	m.	2 nearly black	medium	2 late	Smaller than last.
54	" Plumstone,	m.	1 deep red	medium	2 late	
55	" Rumsey's Late,	m.	1 red	long	2 autumn	New.
56	Napoleon Bigarreau,	b.	1 amb. red, crimped	short	1 medium	Fine, productive.
57	New large black Bigarreau	b.	1 black	1	1 late	
58	Oxheart,	h.	1 dark red	2	1 late	Rare.
59	Remington White Heart,	b.	3 yellow		3 very late	Worthless.
60	Rivers' Early Amber,	h.	1 amber, red		1 early	New.
61	" " Heart,	h.	2		1 medium	New.
62	Roberts' Red Heart,	h.	1 red		1 medium	Very rare.
63	Royal Duke,	d.	1 reddish		1 medium	
64	Sparhawk's Honey,	h.	2 amber-red	medium	1 medium	Profuse bearer.

555	Tobacco leaved, or 4 to a lb.	b.	3	yellow, r.	long	3	late		An impostor.
666	Transparent Guigne,	h.	2	1. red	long	1	late		
677	Waterloo,	h.	1	black	long	1	late		
688	Werder's Early Black,	h.	2	black			very earl' New.		
Bigorneau,		b.	1	pale y., r.	long	1	medium	The Yellow Spanish.	
" Heart,		h.	1	pale y., l. r.	long	1	medium		
" Mazzard,		h.	3			3			
" Tartarian,		h.	2	yellow.	medium	1	medium	Names confused.	

LIST OF PLUMS..

LIST OF PLUMS

No	NAME.	FORM.	STALK.	COLOR.	SEASON.	REMARKS.
		[21]	[22]	[23]	[24]	
1	American Wheat,.....	round	3 medium	pale blue	2 late sum.	Singular.
2	Apricot plum, French,.....	roundish	2 short	y. dotted r.	2 late sum.	Branches very downy.
3	" " English,.....	oval	2 short	pale yellow	2 early autmn.	Branches smooth.
4	Autumn Gage,.....	oval	1 long	yellow	1 early autmn.	
5	Bingham,.....	oval	1 medium	yellow	1 early autmn.	
6	Bleeker's Gage,.....	ro'nd-ov'l	1 blue	yellow	1 late sum.	
7	Blue Gage,.....	round	3 medium	blue	2 late sum.	
8	" Holland,.....	round	2	purple	2 early autmn.	
9	" Imperatrice,.....	obovate	2	medium	deep purple	1 late autmn.
10	" Perdrigon,.....	oval	1 medium	purple	2 late sum.	
11	Breyvoort's purple,.....	oval	1 medium	red, purple	2 early autmn.	
12	Buel's Favorite,.....	ovate	1 medium	pale green	1 late sum.	
13	Byfield,.....	round	3 short	yellow	2 late sum.	
14	Cheston or Violet Diaper,	oval	3 short	dark purple	3 summer	Early, but poor.
15	Chickasaw,.....	round	3	light red		Ornamental.
16	Coe's Golien Drop,.....	oval-ob'.	1 medium	light yellow	1 late autumn.	Very fine.
17	" Late Red,.....	round	2 medium	purple-red	1 late autumn.	

18	Columbia,	round	1	long	purple	2	late sum.	Very handsome.
19	Corse's Admiral,	oval-obo'	1	medium	purple	2	early autm.	
20	" Field-Marshall,	oval	1	short	green, lilac	2	late sum.	
21	" Nota Bene,	round	2	short	lilac, red	1	early autm.	Great bearer.
22	Cruger's Seed'g or Scarlet,	round	2	medium	violet	2	late sum.	
23	Cyprian,	oval	3		purple	3	summer	
24	Damson, common,	obovate	3		purple	3	early sum.	
25	" Prune,	oval	3		purple	2	autumn	
26	" Sweet,	oval	3	medium	pale yellow	2	autumn	
27	" White,	oval	3		purple	3	late autumn	Culinary.
28	" Winter,	round	3	long	yellow	2	late sum.	
29	Dana's Yellow Gage,	oval	2	medium	g. w.	1	late sum.	
30	Denniston's Albany Beauty	round	3	very long	y. g.	1	late sum.	
31	" Superb,	round	1	light	light, red	1	late sum.	Very handsome.
32	" Red,	ro'nd-ova	1	dark purple	black	3	autumn	Coarse; for cooking.
33	Diamond,	oval	1	medium	yellow	1	summer	Gou; productive.
34	Dominie Dull,	long oval	2	long	red-purple	2	early autm.	
35	Drap d'Or,	oval	2	medium	red	2	summer	Preserving
36	Downton Imperatrice,	oval	2	short	light-pur.	1	early sum.	Very showy.
37	Duane's Purple,	oval	1	medium	red-purple	2	summer	
38	Early Scarlet or Cherry,	round	3	short	deep-pur.	1	early sum.	Very poor bearer.
39	" Royal,	roundish	2	short	blue	2	late sum.	
40	" Orleans,	ro'nd-ov	2	medium	pale y. g.	2	late sum.	Old English.
41	" Tours,	oval	2	short	purple	long	late sum.	
42	Eltrey,	oval	2	medium	long			
43	Emerald Drop,	long oval	2	medium				
44	Fotheringham,	obovate	2	long				

LIST OF PLUMS.

No	NAME.	FORM.	STALK.	Color.	SEASON.	REMARKS.
45	French Copper,.....	roundish ro'nd-ovl	2 medium medium	purple deep pur. purple	2 summer 1 mid-autum 2 early autm.	Very profitable. Fine for preserving.
46	Frost Gage,.....	long oval	1	yellow	2 late sum.	
47	German Prune,.....	oval	3	yellow	2 early sum.	
48	Gimson's Early,.....	heart	1	red-purple	2 late sum.	Called Market Plum.
49	Golden Cherry plum,.....	ro'nd-obl	1	pale g.	2 late sum.	Shoots very downy.
50	Goliath,.....	round	2	dark pur.	1 late sum.	The richest plum.
51	Green Gage,.....	obovate	1	blue-pur.	2 late sum.	
52	Gwaliah,.....	oval	2	br. g. y.	3 late sum.	
53	Horse plum,.....	oval	3	yellow	2 early sum.	
54	Howell's Early,.....	oval	2	g. y.	1 summer	
55	Hudson Gage,.....	ova	1	g. y.	1 late sum.	Excellent.
56	Huling's Superb,.....	ro'nd-ovl	1	purple	1 mid-autum	
57	Rockworth Imperatrice,.....	obovate	1	g. y.	1 early autm.	Very productive.
58	Imperial Gage,.....	oval	1	y.	2 summer	
59	" Otoman,.....	roundish	2	dull r.	2 late sum.	
60	Isabella,.....	oval	2	violet	2 late sum.	Branches smooth.
61	Italian Damask,.....	round	2	short	1 late sum.	Very fine.
62	Jefferson,.....	oval	1	long	1 early autm.	
63	Kirke's,.....	round	2	medium	2 late sum.	
64	Layettee,.....	oval	2	medium	2 late sum.	
65	Lawrence's Favorite,.....	ro'nd-ovl	1	short	1 late sum.	Excellent.
66	Lombard,.....	ro'nd-ovl	2	medium	2 late sum.	Great bearer.
67	Long Scarlet,.....	oblong	2	red	2 late sum.	
68	Lucombe's Nonesuch,.....	roundish	1	g. y.	2 late sum.	

			Good for market.	Good for market.
69 Manning's Long Blue,.....	long-oval.	1	autumn dark pur.	autumn late sum.
70 Mirabelle,.....	round-ob	3	medium	preserving.
71 Morocco,.....	roundish	2	short	valuable.
72 Mulberry,.....	oval	1	long	for stocks.
73 Muscle,.....	oblong	2		
74 Nectarine,.....	roundish	1	short	The Early Monsieur.
75 Orleans,.....	round	2	medium	
76 " Early,.....	round-ov	2	medium	
77 " Wilmot's,.....	round-ov	2	medium	
78 " Smith's,.....	ovate	1	medium	
79 Peony's Early Blue,.....	oblong	2	short	The earliest.
80 Pond's Seedling,.....	roundish	2	short	Preserving.
81 Primorliat,.....	oval	3	medium	
82 Prune d'Agen,.....	ovatoe	2	short	
83 Purple Favorite,.....	round-ob	2	medium	
84 " Gage,.....	roundish	2	long	
85 " Egg,.....	oval	1	long	
86 Queen Mother,.....	round	3	short	
87 Red Diaper,.....	ovatoe	1	medium	
88 Red Gage, ₁ ,.....	round-ov	2	short	
89 Red Petaligon,.....	roundish	2	long	
90 Royale,.....	roundish	2	medium	
91 Royal Tours,.....	roundish	1	medium	
92 Sharp's Emperor,.....	round-ov	1	long	
93 Siamese,.....	ovatoe	2	medium	
94 St. Catherine,.....	ovatoe	2	medium	
95 Swiss,.....	globular	2	long	
				Very productive.
				2 autumn. In pairs.
				2 autumn. 1
				mid-autumn. 2

LIST OF PLUMES.

No	NAME.	FORM.	STALK.	COLOR.	SEASON.	REMARKS.
96	Thomas,	round-ov	1	medium	salmon r.	2 late sum.
97	Washington,	round-ov	1	medium	g. y.	1 late sum.
98	White Imperatrice,	obovate	2	medium	y.	2 early autum.
99	" Perdignon,	oval	2	medium	g. y.	2 late sum.
100	Wilmot's Early Orleans,	round-ov	2	medium	purple	1 summer
101	Yellow Gage, English,	round	3	short	y. g.	1 late sum.

PEACHES AND NECTARINES

THE second column indicates the character of the glands on the leaves;—*g.* indicating those which are globe; *r.* reniform; and *s.* glandless or serrated leaves.

The third column indicates the size of the flowers;—*l.* standing for *large*; *m.* for *medium*; and *s.* for *small*.

The fourth indicates the adherence of the flesh to the stone, distinguishing clingstones from freestones; or more properly, *parties from *merlets**; as many melters adhere partially to the stone. But few of the varieties marked *late*, prove uniformly good so far north as central and western New-York.

LIST OF PEACHES.

No	NAME.	Leaves.	Flowers.	Flesh.	Color.	SEASON.	REMARKS.
1	Action Scott,.....	<i>g.</i>	<i>l.</i>	<i>f.</i>	<i>2</i>	<i>y. w.r.</i>	early
2	Apricot Peach,.....	<i>r.</i>	<i>l.</i>	<i>f.</i>	<i>1</i>	<i>y.</i>	very late
3	Astor,.....	<i>g.</i>	<i>l.</i>	<i>f.</i>	<i>1</i>	<i>y. w.r.</i>	early
4	Baltimore Beauty,.....	<i>g.</i>	<i>l.</i>	<i>f.</i>	<i>2</i>	<i>orange.r.</i>	early
5	Barrington,.....	<i>g.</i>	<i>l.</i>	<i>f.</i>	<i>1</i>	<i>y. w.r.</i>	rather late
6	Bellegarre,.....	<i>g.</i>	<i>s.</i>	<i>f.</i>	<i>1</i>	<i>y. g.-r.</i>	medium
7	Bergen's Yellow,.....	<i>r.</i>	<i>s.</i>	<i>f.</i>	<i>1</i>	<i>orange.r.</i>	Very fine and large.
8	Blood Cling,.....	<i>r.</i>	<i>s.</i>	<i>c.</i>	<i>1</i>	<i>dark purple.</i>	Culinary only.
9	Blond Freestone,.....	<i>s.</i>		<i>f.</i>	<i>2</i>	<i>dark purple.</i>	Of little value.

LIST OF PEACHES.

No.	NAME.	Leaves.	Flowers.	Flesh.	Color.	Season.	REMARKS.
10	Brevoort,	r.	s.	f.	y. w.-r.	medium late	Excellent.
11	Catherine,	r.	s.	c.	y. g.-r.	late	
12	Chancellor,	r.	s.	f.	y. w.-crim.	medium	A curiosity.
13	Chinese, or Flat,	r.	i.	f.	y. g.	early	
14	Clinton,	s.	j.	f.	y. w.-r.	very early	
15	Oole's Early Red,	s.	s.	f.	red	early	
16	Coolidge's Favorite,	s.	s.	f.	w.-crim.	rather late	
17	Columbia,	r.	s.	c.	dull r.	rather early	
18	Crawford's Early,	s.	s.	f.	y.-r.	Very fine.	
19	" Late,	s.	s.	f.	y.-r.	late	
20	Double Montagne,	s.	j.	f.	p. g. w.-r.	early	Excellent.
21	" Flowering,	r.	i.	f.	g. y.	medium	Fine, early.
22	Druif Hill,	r.	s.	f.	p. g. w.-r.	late	Ornamental.
23	Early Anne,	s.	s.	f.	g. w.	very early	The Green Nutmeg.
24	" Admirable,	s.	j.	f.	2	early	
25	" Newington,	r.	s.	f.	y. w.-r.	medium	
26	" Tillotson,	s.	s.	f.	y. w.-r.	very early	
27	" York,	s.	j.	f.	1	early	
28	Emperor of Russia,	s.	s.	f.	y. w.-r.	medium	
29	Favorite,	s.	s.	f.	w.-r.	late	
30	Fox's Seedling,	s.	s.	f.	w.-r.	late	
31	George the Fourth,	s.	s.	f.	1	medium	Excellent.
32	Grose Mignonne,	s.	j.	f.	1	early	
33	Haines' Early Red,	s.	s.	f.	2	w. r.	Excellent.

34 Heath Cling,	r.	f.	1	y. w.	very late	
35 " Kenrick's,	r.	f.	1	g. w.-pur.	late	Not very fine.
36 Incomparable,	r.	f.	1	y. w.-l. r.	late	
37 La Grange,	r.	f.	1	g. w.	very late	
38 Large White Clingstone,	g.	f.	1	w. r.	medium	Very fine.
39 Late Admirable,	g.	f.	1	y. g.-p. r.	late	The <i>Totes de Venus</i> .
40 Late Red Rareripe,	g.	f.	1	grey y.-r.	medium	Excellent.
41 " Yellow Alberge,	r.	f.	1	g. y.	very late	Only culinary.
42 Lemon Cling,	r.	f.	1	y.-r. br.	late	<i>Kennedy's</i> , or <i>Pins Apple</i> .
43 Monstrous Pavie,	r.	f.	1	y. w.-dark r.	very late	
44 Magdalen of Courson,	s.	f.	1	y. w.-r.	early	<i>The Red Magdalen</i> .
45 Malta,	s.	f.	1	p. g.-pur.	rather early	
46 Morris' Red Rareripe,	s.	f.	1	g. w.-r.	rather early	Very fine.
47 " White Rareripe,	r.	f.	2	w.	rather late	Very fine.
48 Morrisania Pound,	g.	f.	1	g. w.-r.	late	
49 Nivette,	g.	f.	1	p. g.-r.	medium	
50 Noblesse,	s.	f.	1	p. g.-r.	medium	
51 Oldmixon Freestone,	g.	f.	1	y. w.-r.	medium	
52 " Clingstone,	g.	f.	1	y. w.-r.	rather late	
53 Old Newington,	s.	f.	1	orange-r.	medium	
54 Orange Cling,	s.	f.	1	y.-r.	late	
55 Poole's Large Yellow,	r.	f.	1	y. g.-dull r.	late	
56 President,	g.	f.	1	y.-dark r.	medium	
57 Red Cheek Melocoton,	g.	f.	3	y.-r.	very early	<i>Yellow-fleshed</i> .
58 Red or Brown Nutmeg,	r.	f.	1	w.-r.	early	Of little value.
59 Red Rareripe,	s.	f.	1	g. w.-deep r.	medium	
60 Royal Charlotte,	s.	f.				

LIST OF PEACHES.

No.	Name.	Leaves.	Flowers.	Flesh	Color.	Season.	Remarks.
61	Royal George,.....	s.	s.	f.	1 w.-deep r. 1 w.-deep r. 2 f.	early rather early early	Very fine.
62	" smooth lvd	s.	s.	f.	2 f.	late	
63	Scott's Early Red,.....	s.	s.	f.	2 f. w.-r.		
64	Smith's Newington,.....	s.	l.	c.	2 p. y.-r. pur		
65	Smock,.....	r.	r.	f.	1 orange y.-r	late	Yellow-fleshed.
66	Snow,.....	r.	r.	f.	1 white	medium	
67	Strawberry, or Rose,.....	r.	r.	f.	1 deep r.	early	
68	Sweetwater,.....	s.	s.	f.	2 p. g. w.	very early	Very fine.
69	Tippencanoe,.....	r.	s.	c.	1 y.-r.	late	Yellow-fleshed.
70	Van Zandt's Superb,.....	s.	s.	f.	2 y.-r.	medium	Beautiful.
71	Walter's Early,.....	s.	s.	f.	1 w.-r.	early	
72	Washington,.....	s.	s.	f.	1 y. w. crim.	rather late	
73	" Cling,.....	r.	s.	c.	2 y. g.	late	
74	White Imperial,.....	s.	s.	f.	1 y. w.	early	Excellent.
75	White Nutmeg,.....	s.	s.	f.	3 g. w.	very early	Of little value.
76	Yellow Alberge,.....	s.	s.	f.	2 y.-r. pur.	early	
77	Yellow Rarerep,.....	s.	s.	f.	1 orange-y.-r.	early	Very fine.

LIST OF NECTARINES.

No	NAME.	Leaves.	Flowers.	Flesh	Color.	Season.	REMARKS.
1	Boston or Perkins,	g. r.	r. f.	f. c. f.	1 y.-deep r. 1 y.-dull r. 1 p. g.-violet	medium medium early	The handsomest.
2	Broomfield,	n. n.	r. f.	f. f.	2 p. g.-pur. r.	rather early	
3	Downion,	r. r.	r. n.	f. f.	2 y. g.-pur.	early	Very fine.
4	Duc du Tellier's,	r. r.	r. n.	f. f.	2 p. g.-pur.	rather early	Very fine.
5	Early Violet,	r. r.	r. n.	f. f.	3 y. g.-r.	very early	Poor.
6	Erluge,	r. r.	r. n.	c. f.	2 y.-scarlet	medium	Rather poor.
7	Fairchild's,	r. r.	r. f.	c. f.	1 y.-scarlet	rather late	Second rate.
8	Golden,	r. r.	r. f.	f. f.	1 p. g.-violet	early	Fine.
9	" Prince's,	r. r.	r. f.	f. f.	2 orange.	very early	The best early.
10	Hardwick's Seedling,	s. s.	s. f.	f. f.	2 p. g.-dark r.	early	Poor bearer.
11	Hunt's Tawny,	r. r.	r. f.	f. f.	1 white	medium	
12	Murry,	r. r.	r. f.	f. f.	2 g. y.-r.	medium	
13	New White,	r. s.	r. f.	f. f.	1 p. g.-dark r.	rather early	
14	Newington,	s. s.	s. f.	f. f.	1 white	medium	
15	" Early,	s. r.	s. r.	f. f.	3 g.-dull r.	late	
16	Old White,	r. s.	r. f.	f. f.	1 or. y.-br. r.	early	
17	Peterborough,	r. s.	r. f.	f. f.	1 g. y.-dull r.	medium	
18	Pitmaston Orange,	s. r.	s. f.	f. f.			
19	Red Roman,	r. r.	r. f.	f. f.			

LIST OF APRICOTS.

LIST OF APRICOTS.

No	NAME.	SHAPE.	COLOR.	KERNEL.	SEASON.	REMARKS.
1	Aberge,	roundish	deep y.	bitter	2 rather late	
2	Black,	round	dark pur.	sweet	2 early	Very hardy.
3	Brels,	roundish	orange	sweet	1 early	Vigorous growth.
4	Brussels,	oval	pale y.	bitter	2 rather late	
5	Henskirke,	roundish	orange r.	bitter	1 quite early	Fine.
6	Large Early,	oblong	orange	bitter	1 early	
7	Moorpark,	roundish	or.-br. r.	bitter	1 early	Stone perforate.
8	Musch,	round	deep y.	sweet	1	
9	Orange, or Persian,	roundish	orange	sweet	2 quite early	
10	Peach,	roundish	orange	bitter	1 early	Stone perforate.
11	Red Mascline,	round	orange	bitter	2 very early	
12	Roman,	oblong	pale y.	bitter	2	
13	Royal,	roundish	y.-or.	sweet	1 early	
14	Turkey,	roundish	y.-or.	bitter	1 rather late	
15	White Mascline,	roundish	nearly w.	bitter	2 quite early	

NOTE ON GRAFTING THE VINE.

(See page 157.)

“*Grafting the Vine* is attended with great success in the cleft manner, if treated as follows:—Cut your scions during winter, keeping them partially buried in a cool damp cellar till wanted. As soon as the leaves of the old vine or stock are fully expanded, and all danger of bleeding is past, say about the 10th of June, cut it off smoothly below the surface of the ground, and split the stock and insert one or two scions in the usual manner, binding the cleft well together if it does not close firmly. Draw the soil carefully over the whole, leaving two or three buds of the scion above the surface. If the root of the stock is a strong native grape, the graft will frequently grow ten or fifteen feet during the first season, and yield a fair crop during the second year.

“The Vine may also be grafted with good success at the usual season if grafted below the ground, but above ground it should not be attempted on account of bleeding, until the leaves are nearly expanded.”—*Downing's Fruit and Fruit Trees of America.*